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Service Manual

ORDER NO.
CRT3214

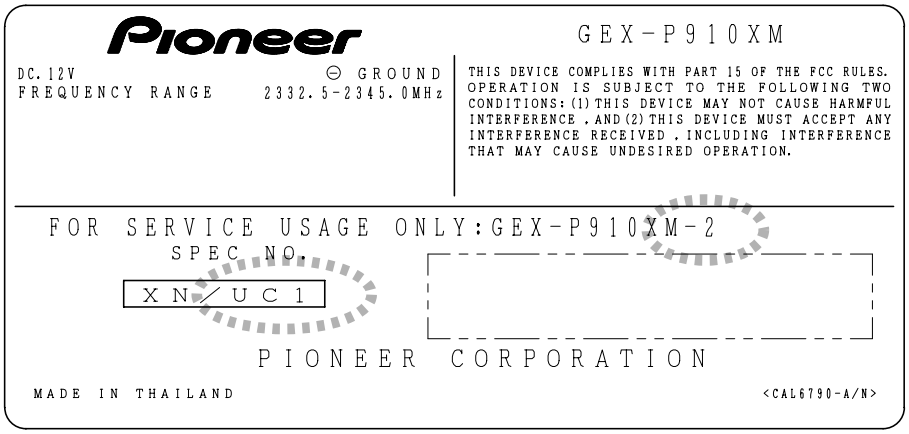
XM SATELLITE DIGITAL TUNER

GEX-P910XM XN/UC1

● **This service manual should be used together with the manual(s) listed below.**
For the parts numbers, adjustments, etc. which are not shown in this manual, refer to the following manual(s).

Model No.	Order No.	Mech. Module	Remarks
GEX-P900XM/UC	CRT2744		

● **GEX-P910XM/XN/UC1 is identical to GEX-P910XM/XN/UC in appearance and they share the same model number.**
GEX-P910XM/XN/UC1 name plate is shown below. Check this against the name plate on the unit to identify the model.
If the name plate differs, please refer to the CRT2964 GEX-P910XM/XN/UC service manual.


Pioneer
GEX-P910XM
DC.12V
⊖ GROUND
FREQUENCY RANGE
2332.5-2345.0MHz
THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS: (1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE , AND (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED , INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRED OPERATION.
FOR SERVICE USAGE ONLY:GEX-P910XM-2
SPEC NO.
XN/UC1
PIONEER CORPORATION
MADE IN THAILAND
<CAL6790-A/N>

PIONEER CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153-8654, Japan
PIONEER ELECTRONICS (USA) INC. P.O.Box 1760, Long Beach, CA 90801-1760 U.S.A.
PIONEER EUROPE NV Haven 1087 Keetberglaan 1, 9120 Melsele, Belgium
PIONEER ELECTRONICS ASIACENTRE PTE.LTD. 253 Alexandra Road, #04-01, Singapore 159936

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K-ZZB. DEC. 2003 Printed in Japan

EXPLODED VIEWS AND PARTS LIST

PACKING(Page 2)

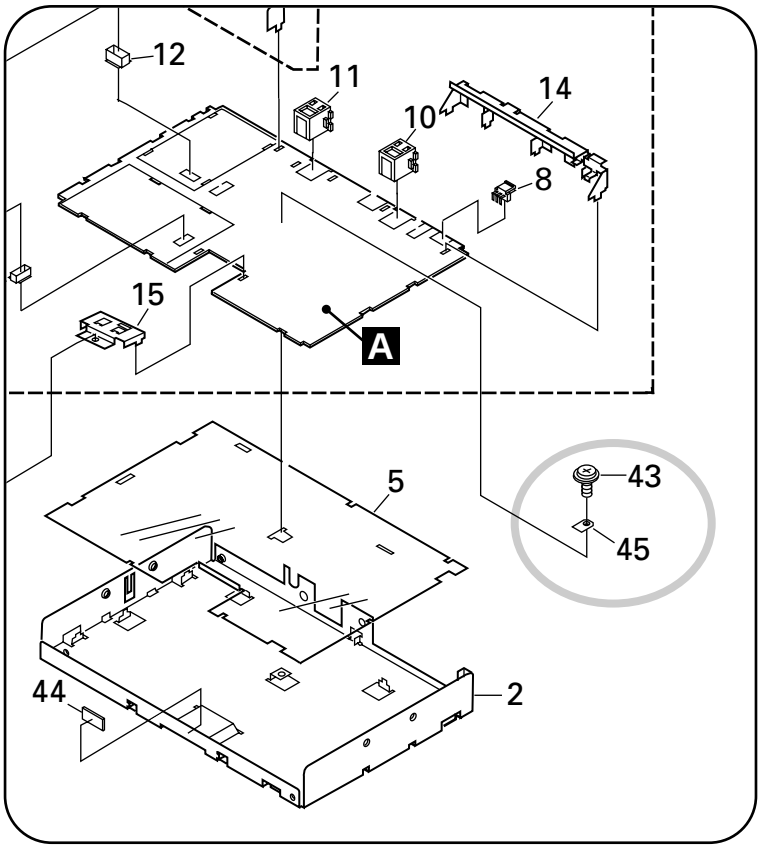
● PACKING SECTION PARTS LIST

Mark No.	Description	Part No. GEX-P900XM/UC	Part No. GEX-P910XM/XN/UC1
1-3	Owner's Manual	CRB1732	CRB1801
1-4	Installation Manual	CRB1733	CRB1802
10	Carton	CHG4466	CHG4632
11	Sub Carton	CHG4469	CHG5216(Carton)
12	Contain Box	CHL4466	CHL5216
13	Protector	CHP2443	CHP2527
14	Inner Box	CHW1920	Not used

EXTERIOR(Page 4)

● EXTERIOR SECTION PARTS LIST

Mark No.	Description	Part No. GEX-P900XM/UC	Part No. GEX-P910XM/XN/UC1
3	Case	CNB2659	CNB2820
6	Main Unit	CWM7660	CWM9523
28	DSP Module	CWX2555	CWX2972
40	Holder	CNC9332	CND2275
43	Screw	ISS26P055FUC	ISS26P055FTC
45	Terminal(CN601)	Not used	VNF1084
46	Filter(Service)	Not used	CXX1678


12
11
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A
5
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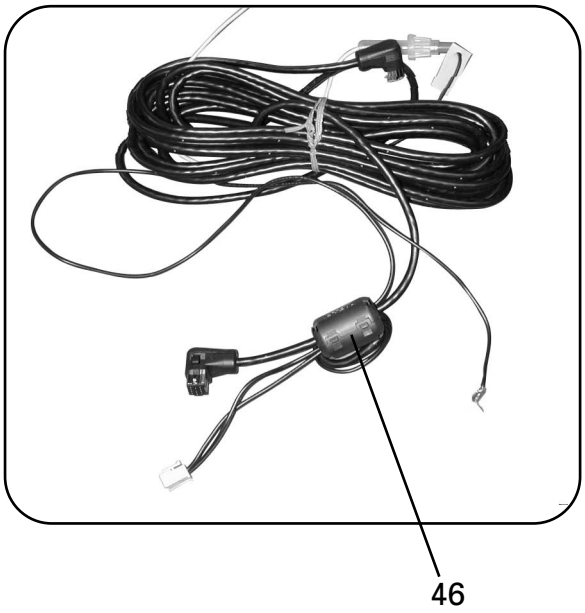
45
44
2


46

ELECTRICAL PARTS LIST(Page 30)

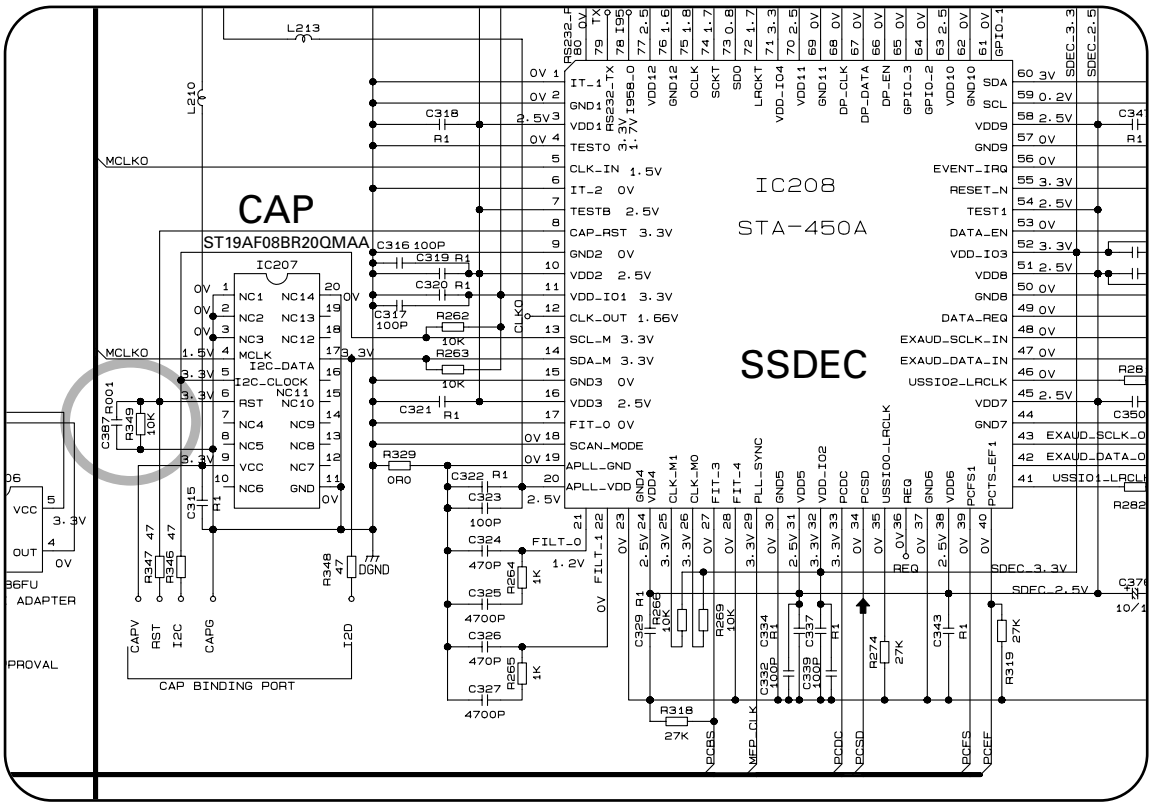
RF Module

Symbol and Description		Part No. GEX-P900XM/UC	Part No. GEX-P910XM/XN/UC1
Q2	Transistor	2SA1774	Not used
Q3	Transistor	UMX2N	Not used
L15	Inductor	LCYB1N8S1005	LCYB1N2S1005
L20	Inductor	LCYB3N9S1005	LCYB2N2S1005
L53	Inductor	LCYB2N7S1005	LCYB82NJ1005
R3,6		RS1/16SS101J	RS1/16SS431J
R4		RS1/16SS680J	RS1/16SS120J
R5,7		RS1/16SS751J	RS1/16SS122J
R9,11		RS1/16SS431J	Not used
R10		RS1/16SS120J	RS1/16SS0R0J
R13		RS1/16SS562J	RS1/16SS0R0J
R14		RS1/16SS362J	RS1/16SS9100F
R15		RS1/16SS362J	RS1/16SS2400F
R30		RS1/16SS473J	Not used
R32		RS1/16SS332J	Not used
R33		RS1/16SS222J	Not used
R36		RS1/16SS472J	Not used
R39		RS1/16SS471J	Not used
R41		RS1/16SS151J	RS1/16SS221J
R48		RS1/16SS472J	RS1/16SS0R0J
R57,58		RS1/16SS471J	RS1/16SS121J
R71,72		RS1/16SS221J	Not used
R73		RS1/16SS220J	RS1/16SS0R0J
R74		RS1/16SS220J	RS1/16SS180J
R75,76		RS1/16SS221J	RS1/16SS301J
C9,10,15,16		CCSSCH101J50	CCSSCH220J50
C30		CSZS3R3M16	Not used
C37,85,155		CKSSYB103K16	Not used
C138		CCSSCJ3R0C50	CCSSCH120J50

DSP Module

Symbol and Description		Part No. GEX-P900XM/UC	Part No. GEX-P910XM/XN/UC1
IC202	IC	STA-400	STA-400A
IC203	IC	K4S640832E-TL1H	K4S280832E-TL1H
IC205	IC	K4S640832E-TL1H	Not used
IC208	IC	STA-450	STA-450A
R337		RS1/16SS103J	Not used
R349		Not used	RS1/16SS103J
C283,307,313		CCSSCH101J50	Not used
C284,285,290,297,302,308,314		CKSSYB104K10	Not used
C387		Not used	CKSSYB102K50

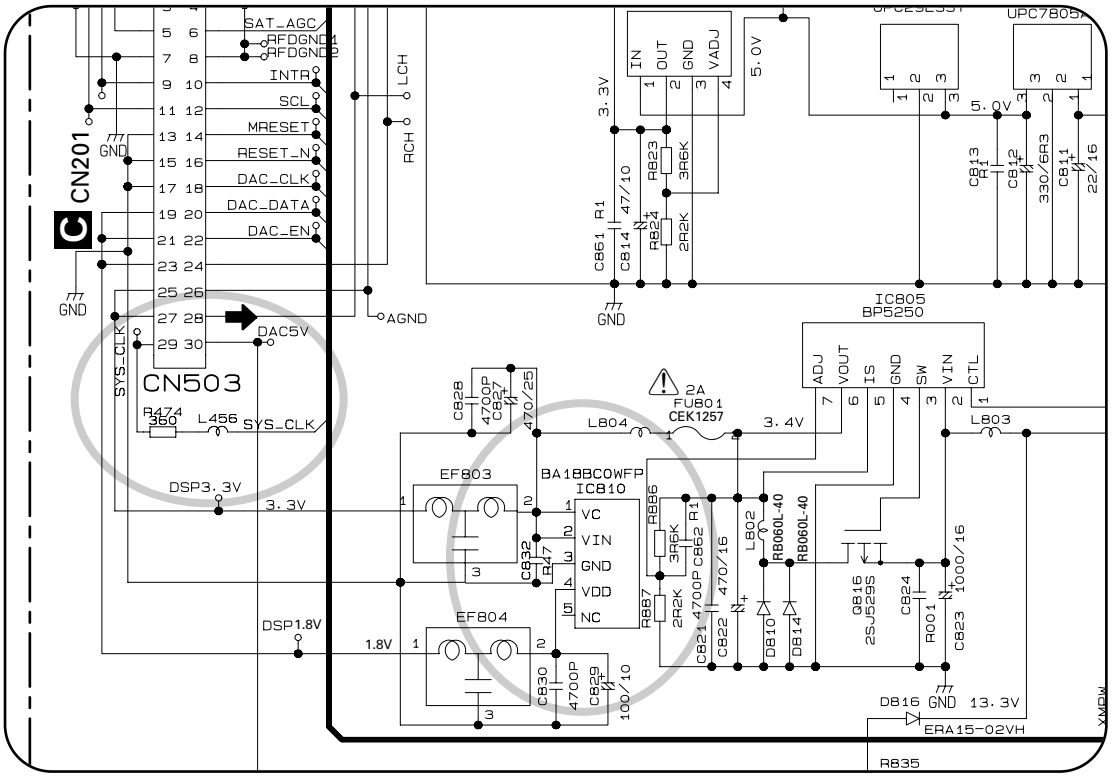
DSP Module Page 17 C-6



Main Unit

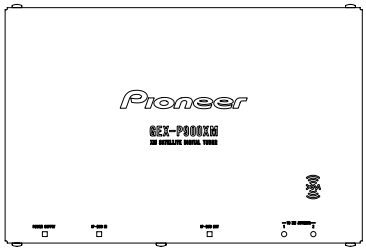
Symbol and Description		Part No. GEX-P900XM/UC	Part No. GEX-P910XM/XN/UC1
IC601	IC	PD5680C	PD5845A
IC806	IC	S-80827ANUP-EDQ	S-80827CNUA-B8M
IC810	IC	Not used	BA18BC0WFP
D810,814	Diode	F2J4S	RB060L-40
D812,813	Diode	ERA15-02VH	Not used
L456	Inductor	Not used	CTF1346
FU801	Fuse(2A)	CEK1190	CEK1257
R457,465		RS1/16SS563J	RS1/16SS473J
R469		RS1/16SS102J	RS1/16SS152J
R474		Not used	RS1/16SS361J
R607		RS1/16SS473J	RS1/16SS104J
C829		CCH1337-A-P35 (470µF/25V)	CEAT101M10
C832		Not used	CKSRYB474K10

Main Unit Page 8 C-2



Pioneer *sound.vision.soul*

Service Manual



ORDER NO.
CRT2744

XM SATELLITE DIGITAL TUNER

GEX-P900XM UC

CONTENTS

1. SAFETY INFORMATION 2
2. EXPLODED VIEWS AND PARTS LIST 2
3. BLOCK DIAGRAM AND SCHEMATIC DIAGRAM 6
4. PCB CONNECTION DIAGRAM 22
5. ELECTRICAL PARTS LIST 30
6. ADJUSTMENT.....36
7. GENERAL INFORMATION 47
7.1 DIAGNOSIS 47
7.1.1 DISASSEMBLY 47
7.1.2 CONNECTOR FUNCTION DESCRIPTION 48
7.2 IC 49
7.3 OPERATIONAL FLOW CHART 58
8. OPERATIONS AND SPECIFICATIONS.....59

PIONEER CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153-8654, Japan
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K-ZZY. AUG. 2001 Printed in Japan

1. SAFETY INFORMATION

CAUTION

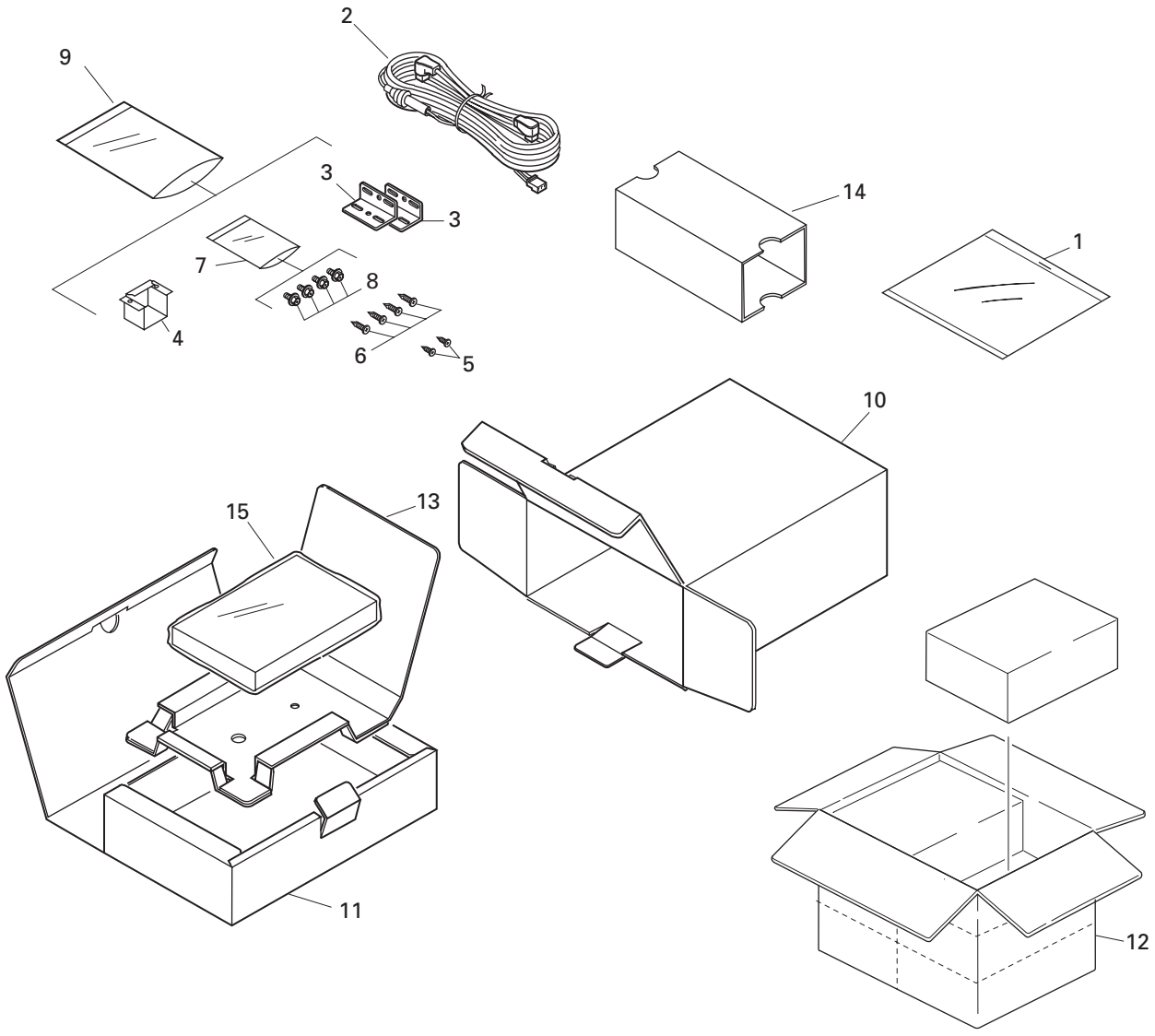
This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer.
Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty.
If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING

This product contains lead in solder and certain electrical parts contain chemicals which are known to the state of California to cause cancer, birth defects or other reproductive harm.
Health & Safety Code Section 25249.6 - Proposition 65

2. EXPLODED VIEWS AND PARTS LIST

2.1 PACKING



NOTE:

- Parts marked by "*" are generally unavailable because they are not in our Master Spare Parts List.
- Screws adjacent to ∇ mark on the product are used for disassembly.

● PACKING SECTION PARTS LIST

Mark	No.	Description	Part No.
	1-1	Polyethylene Bag	CEG1116
*	1-2	Card	ARY1048
	1-3	Owner's Manual	CRB1732
	1-4	Installation Manual	CRB1733
*	1-5	Caution Card	CRP1264
	2	Cord	CDE5831
	3	Angle	CNB2351
	4	Holder	CNC9750
	5	Screw	BMZ30P060FZK
	6	Screw	BNC40P120FZK
*	7	Polyethylene Bag	CEG1158
	8	Screw	HMF40P060FZK
*	9	Polyethylene Bag	CEG1101
	10	Carton	CHG4466
	11	Sub Carton	CHG4469
	12	Contain Box	CHL4466
	13	Protector	CHP2443
	14	Inner Box	CHW1920
	15	Polyethylene Bag	CEG1173

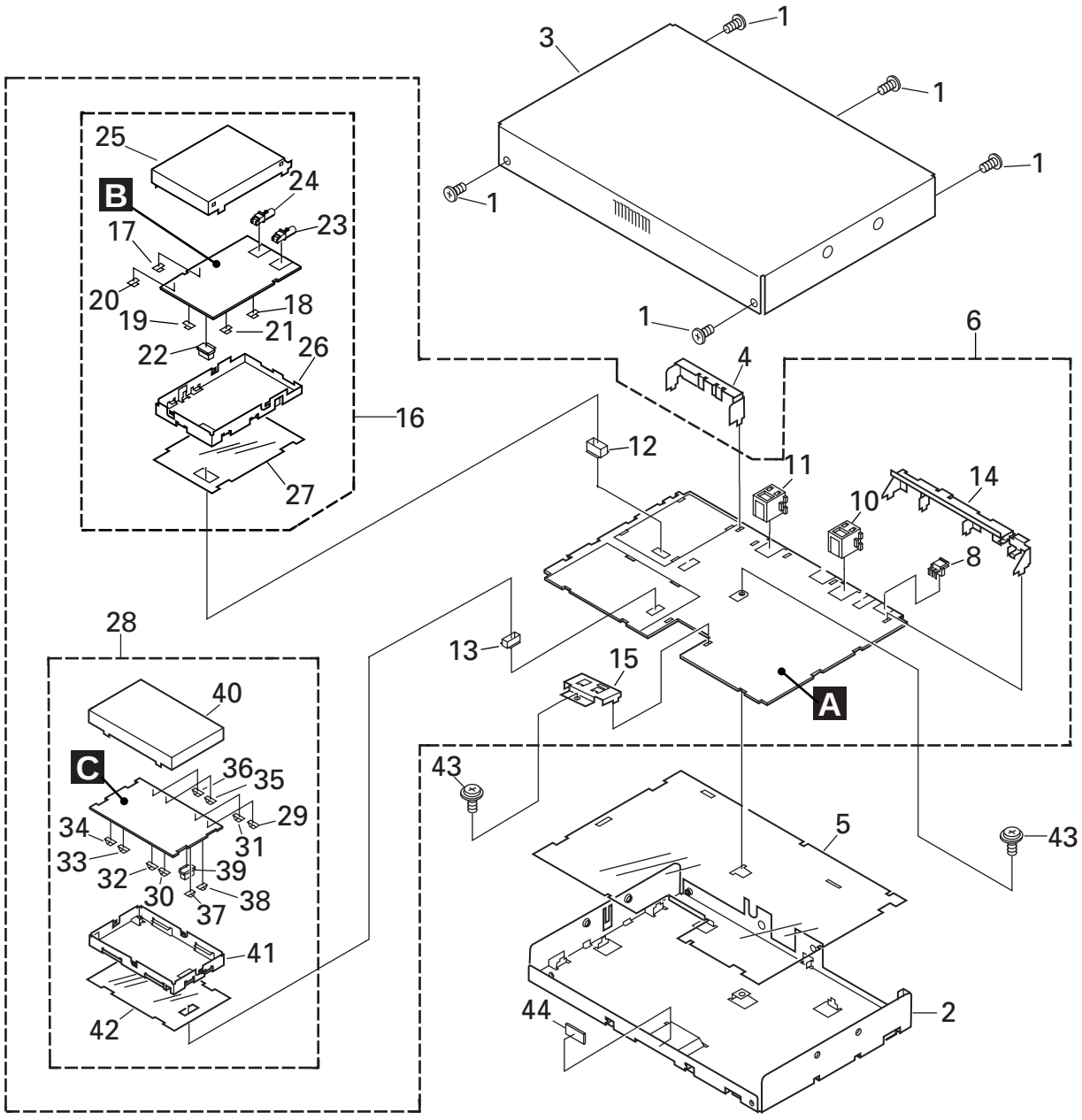
● Owner's Manual

Part No.	Language
CRB1732	English

● Installation Manual

Part No.	Language
CRB1733	English

2.2 EXTERIOR


1
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B
17
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A
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C
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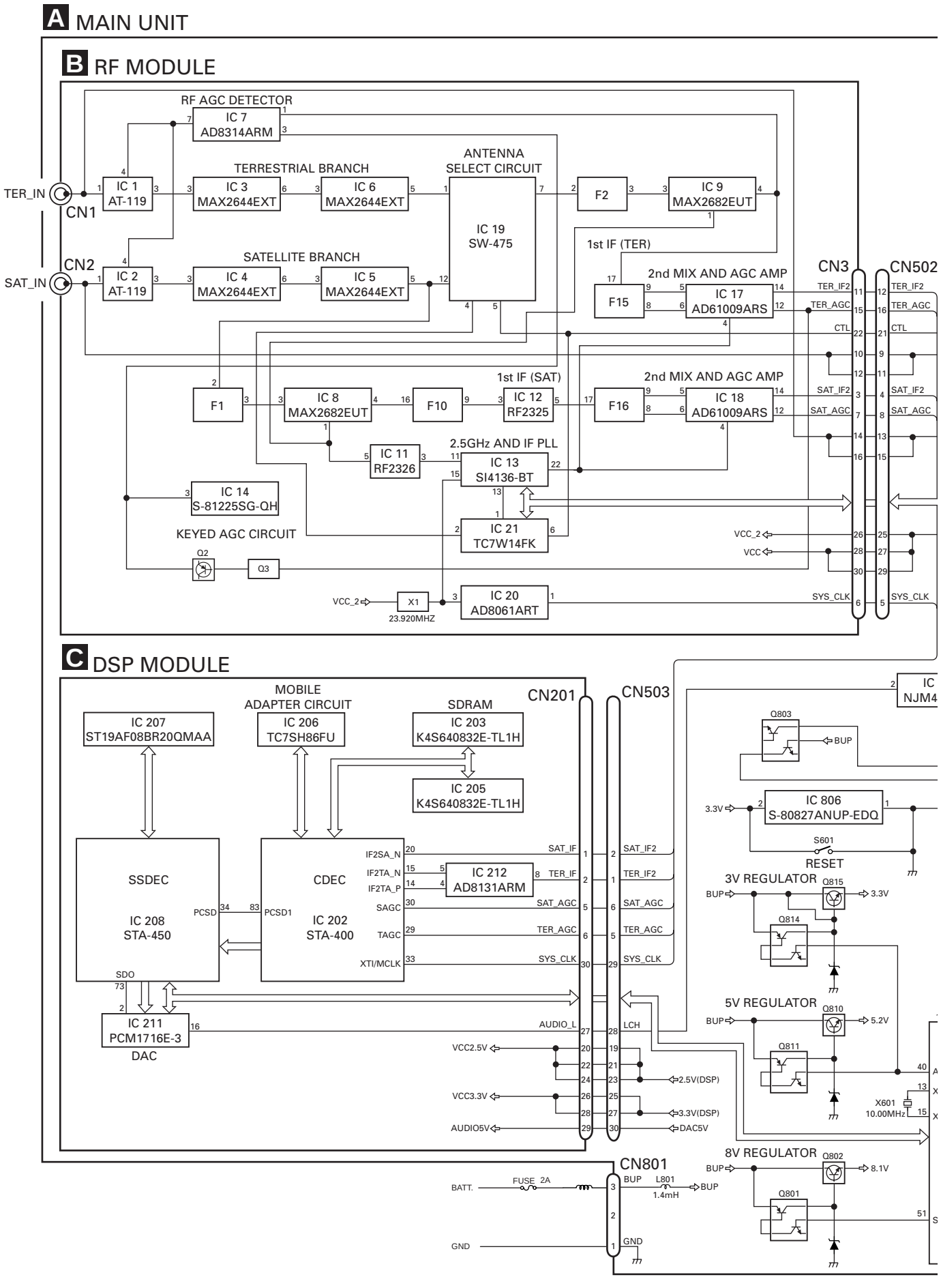
2

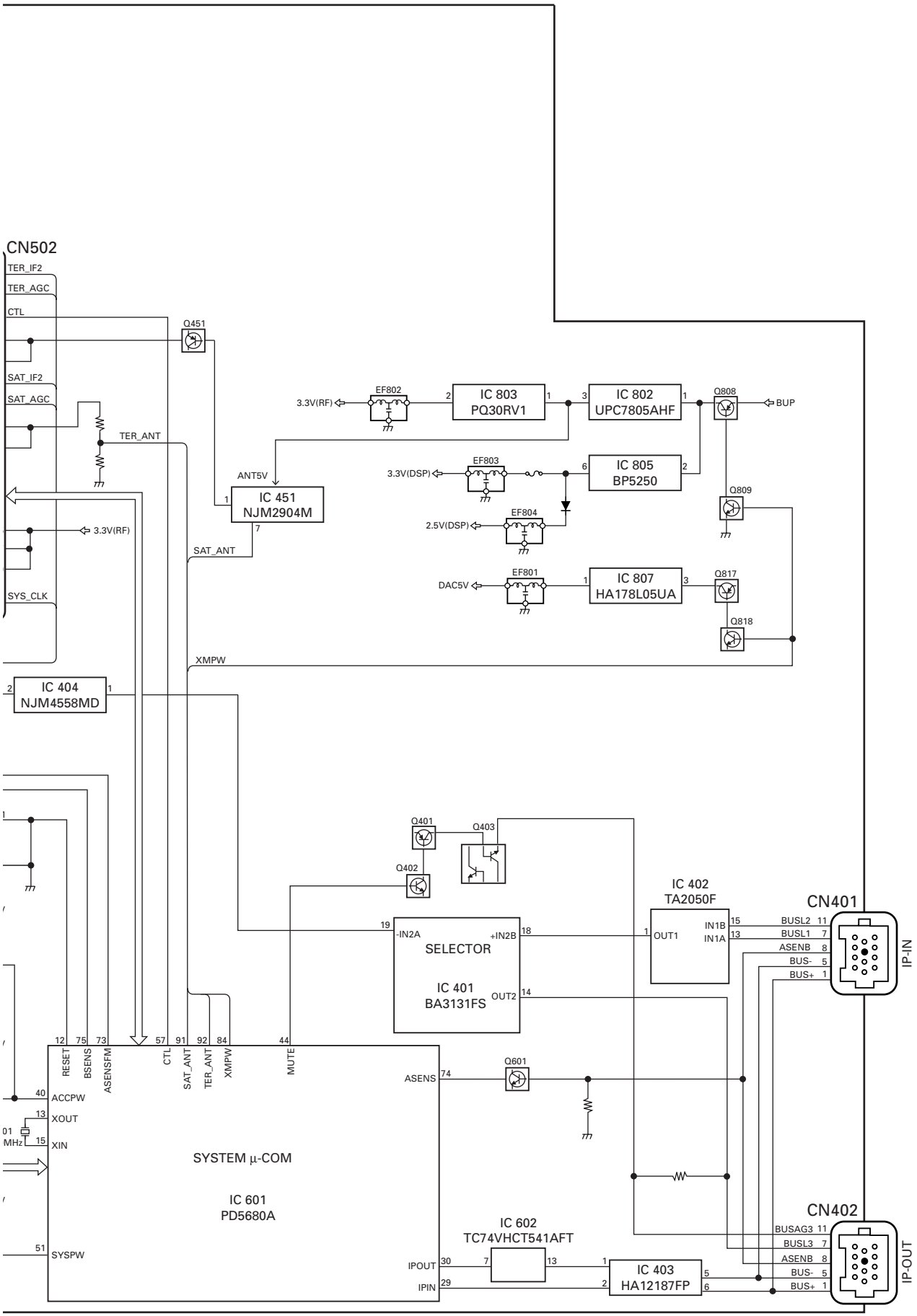
● EXTERIOR SECTION PARTS LIST

Mark	No.	Description	Part No.
	1	Screw	BSZ30P060FZK
	2	Chassis	CNA2387
	3	Case	CNB2659
	4	Holder	CNC9329
	5	Insulator	CNM7196
	6	Main Unit	CWM7660
	7	•••••	
	8	Plug(CN801)	CKS-460
	9	•••••	
	10	Connector(CN401)	CKS3410
	11	Connector(CN402)	CKS3413
	12	Connector(CN502)	CKS4563
	13	Connector(CN503)	CKS4563
	14	Holder	CNC9328
	15	Holder	CNC9513
	16	RF Module	CWE1615
	17	Terminal(CN4)	CKF1066
	18	Terminal(CN5)	CKF1066
	19	Terminal(CN6)	CKF1066
	20	Terminal(CN7)	CKF1066
	21	Terminal(CN8)	CKF1066
	22	Connector(CN3)	CKS4564
	23	Connector(CN1)	CKX1062
	24	Connector(CN2)	CKX1063
	25	Case	CNC9335
	26	Holder	CNC9336
	27	Insulator	CNM7217
	28	DSP Module	CWX2555
	29	Terminal(CN202)	CKF1066
	30	Terminal(CN203)	CKF1066
	31	Terminal(CN204)	CKF1066
	32	Terminal(CN205)	CKF1066
	33	Terminal(CN207)	CKF1066
	34	Terminal(CN208)	CKF1066
	35	Terminal(CN209)	CKF1066
	36	Terminal(CN210)	CKF1066
	37	Terminal(CN212)	CKF1066
	38	Terminal(CN213)	CKF1066
	39	Connector(CN201)	CKS4564
	40	Holder	CNC9332
	41	Holder	CNC9333
	42	Insulator	CNM7216
	43	Screw	ISS26P055FUC
*	44	Cushion	CNM6997

3. BLOCK DIAGRAM AND SCHEMATIC DIAGRAM

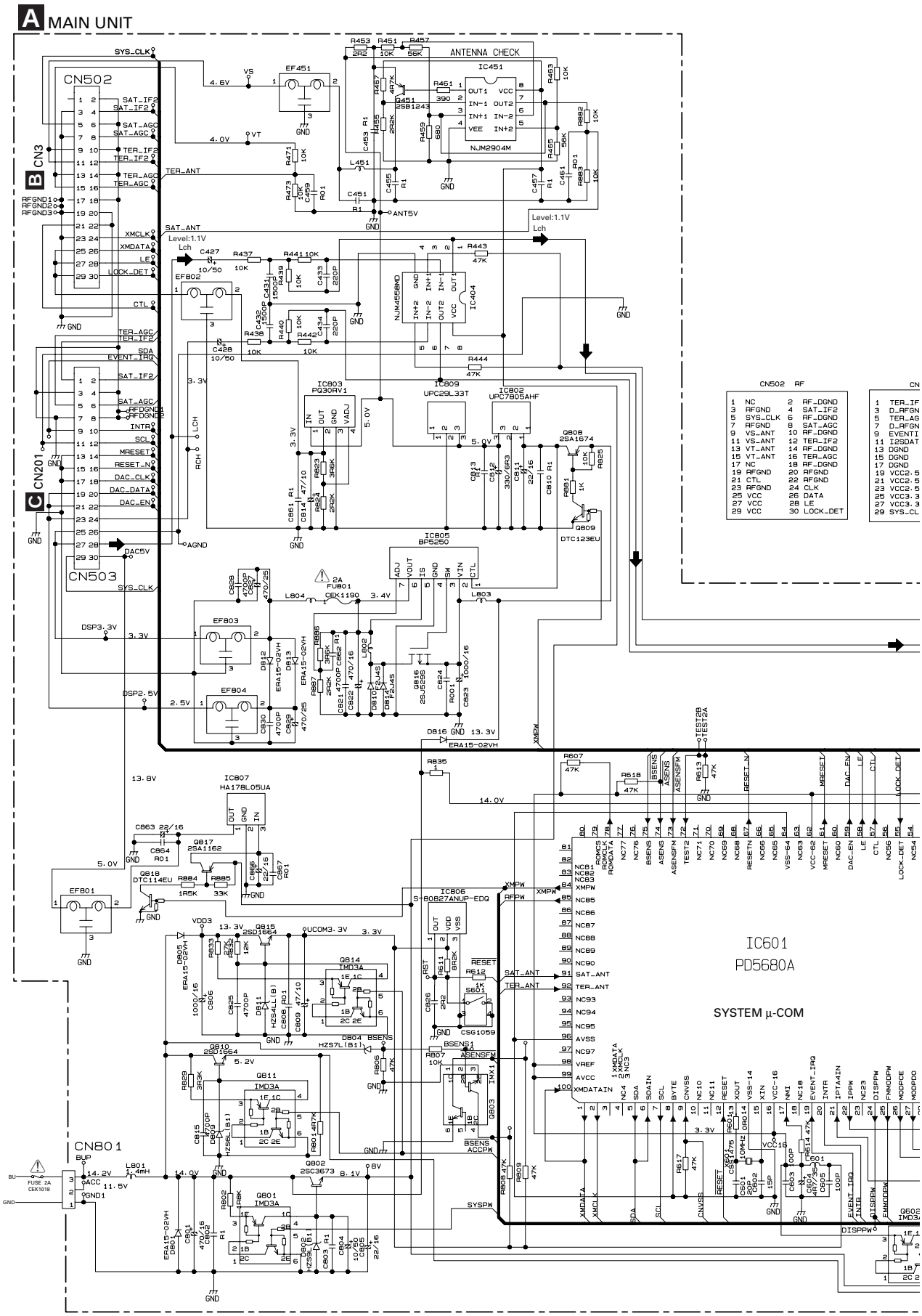
3.1 BLOCK DIAGRAM




CN502
TER_IF2
TER_AGC
CTL
SAT_IF2
SAT_AGC
TER_ANT
3.3V(RF)
SYS_CLK
Q451
ANT5V
IC 451
NJM2904M
SAT_ANT
XMPW
IC 404
NJM4558MD
3.3V(RF)
EF802
IC 803
PQ30RV1
IC 802
UPC7805AHF
Q808
BUP
3.3V(DSP)
EF803
IC 805
BP5250
Q809
2.5V(DSP)
EF804
DAC5V
EF801
IC 807
HA178L05UA
Q817
Q818
Q401
Q403
Q402
IC 402
TA2050F
CN401
IP-IN
-IN2A
+IN2B
SELECTOR
IC 401
BA3131FS
OUT2
OUT1
IN1B
IN1A
BUSL2
BUSL1
ASENB
BUS-
BUS+
RESET
BSENS
ASENSFM
CTL
SAT_ANT
TER_ANT
XMPW
MUTE
ASENS
Q601
ACCPW
XOUT
XIN
SYSPW
SYSTEM μ-COM
IC 601
PD5680A
IC 602
TC74VHCT541AFT
IPOUT
IPIN
IC 403
HA12187FP
CN402
IP-OUT
BUSAG3
BUSL3
ASENB
BUS-
BUS+

3.2 MAIN UNIT

Note: When ordering service parts, be sure to refer to “EXPLODED VIEWS AND PARTS LIST” or “ELECTRICAL PARTS LIST”.



CN 503 DSP

1	TER_IF	2	SAT_IF
3	D_RFGND	4	D_RFGND
5	TER_AGC	6	SAT_AGC
7	D_RFGND	8	D_RFGND
9	EVENTIRQ	10	INTR
11	I2SDATA	12	I2SLCK
13	DGND	14	CDECRESET
15	DGND	16	SDECRESET
17	DGND	18	DACCLK
19	VCC2.5	20	DACDATA
21	VCC2.5	22	DACEN
23	VCC2.5	24	AUDIO_R
25	VCC3.3	26	AGND
27	VCC3.3	28	AUDIO_L
29	SYS_CLK	30	AUDIO_S

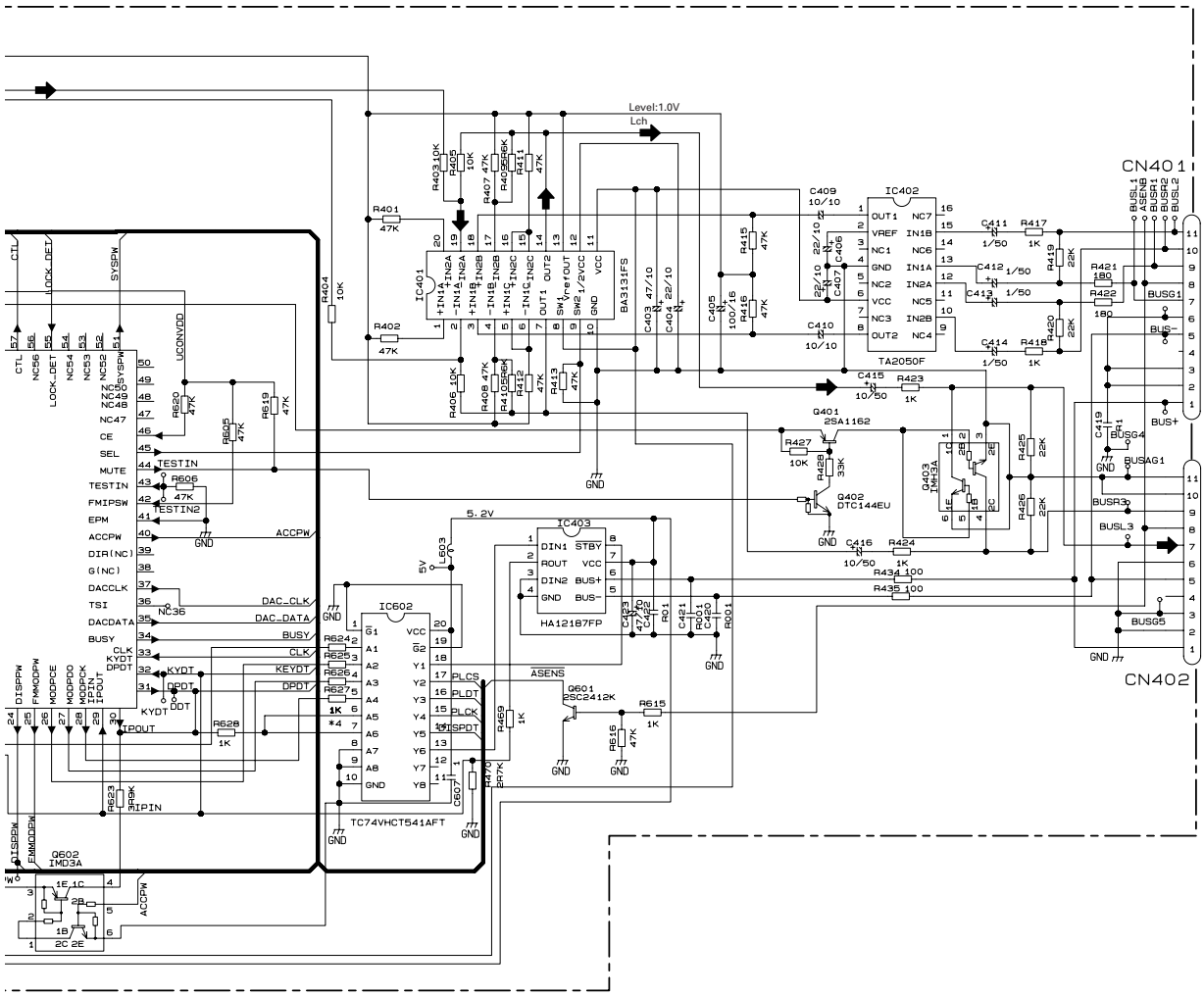
NOTE :

- Symbol indicates a resistor. No differentiation is made between chip resistors and discrete resistors.
- Symbol indicates a capacitor. No differentiation is made between chip capacitors and discrete capacitors.

The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

: The power supply is shown with the marked box.

Decimal points for resistor and capacitor fixed values are expressed as :
2.2→2R2
0.022→R022



3.3 RF MODULE(GUIDE PAGE)

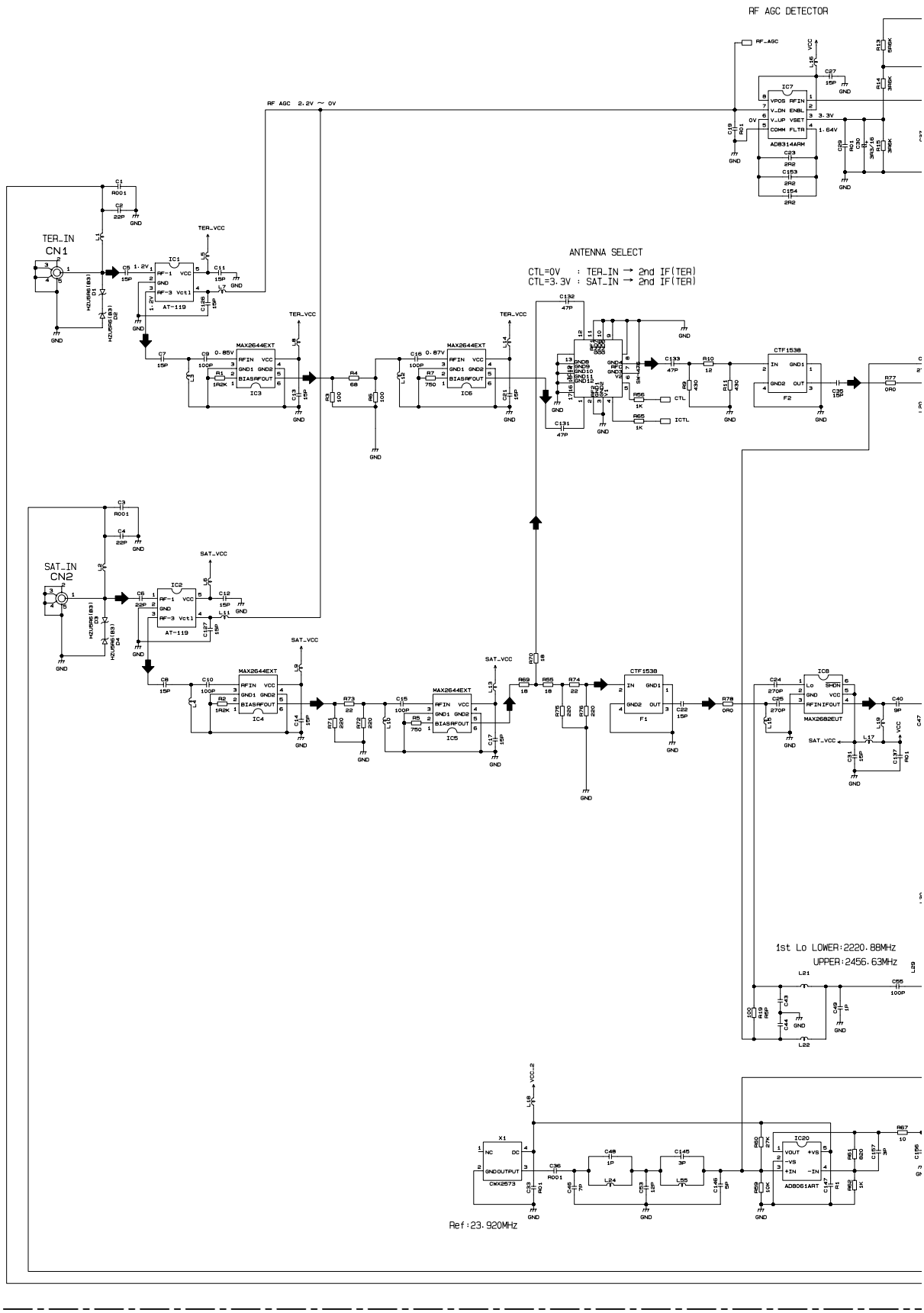
B-a

Large size SCH diagram

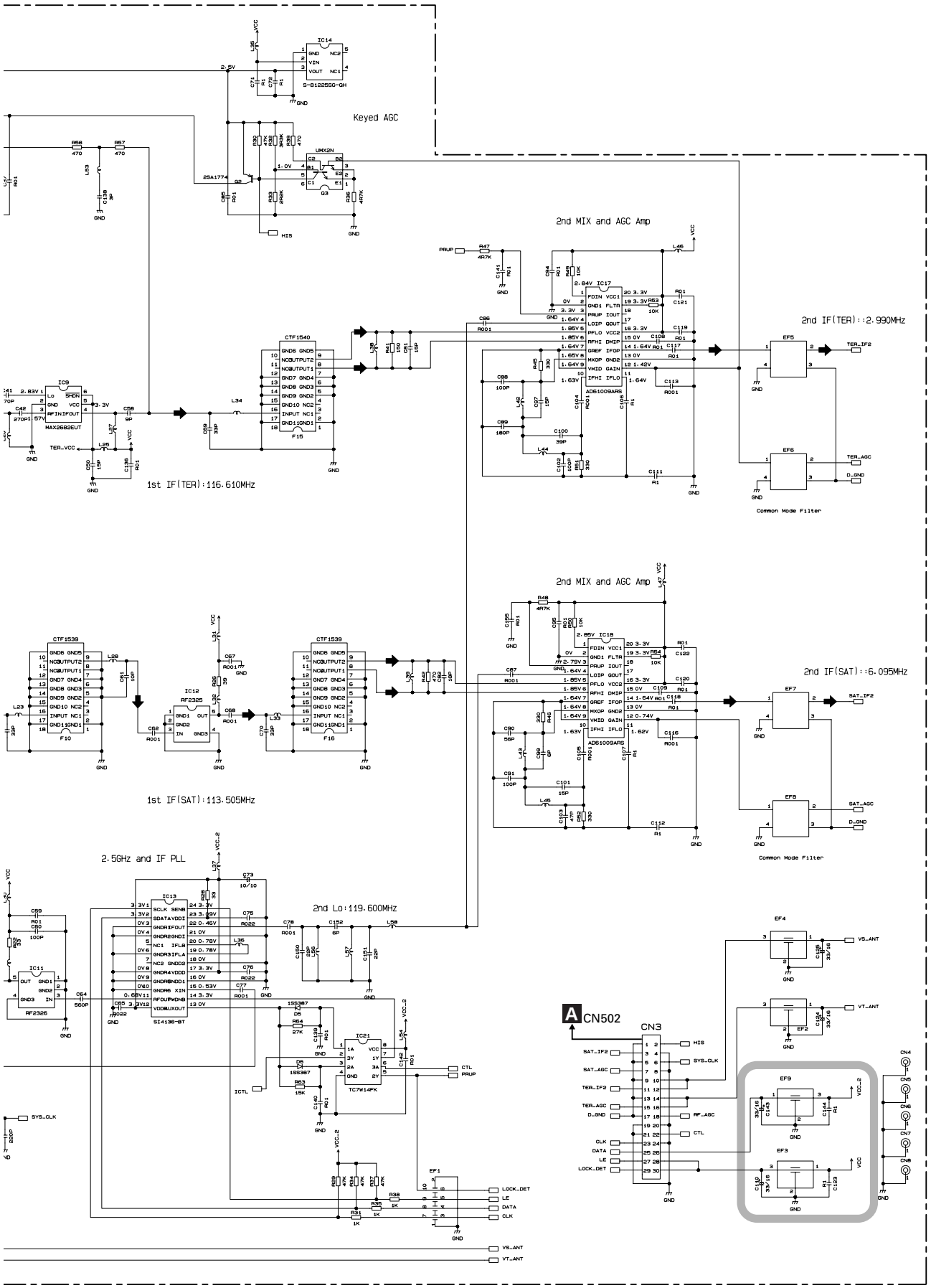
Guide page

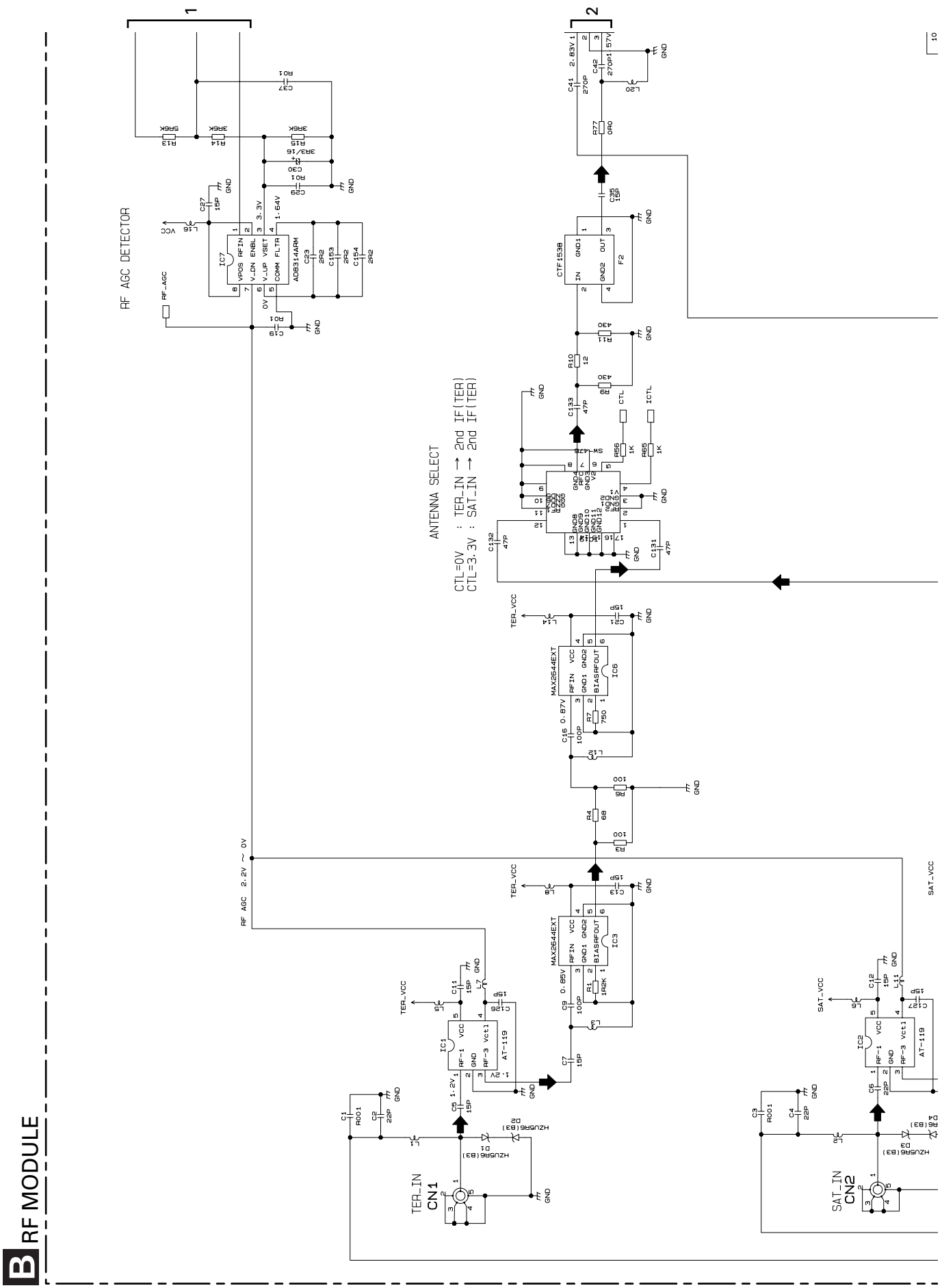
Detailed page

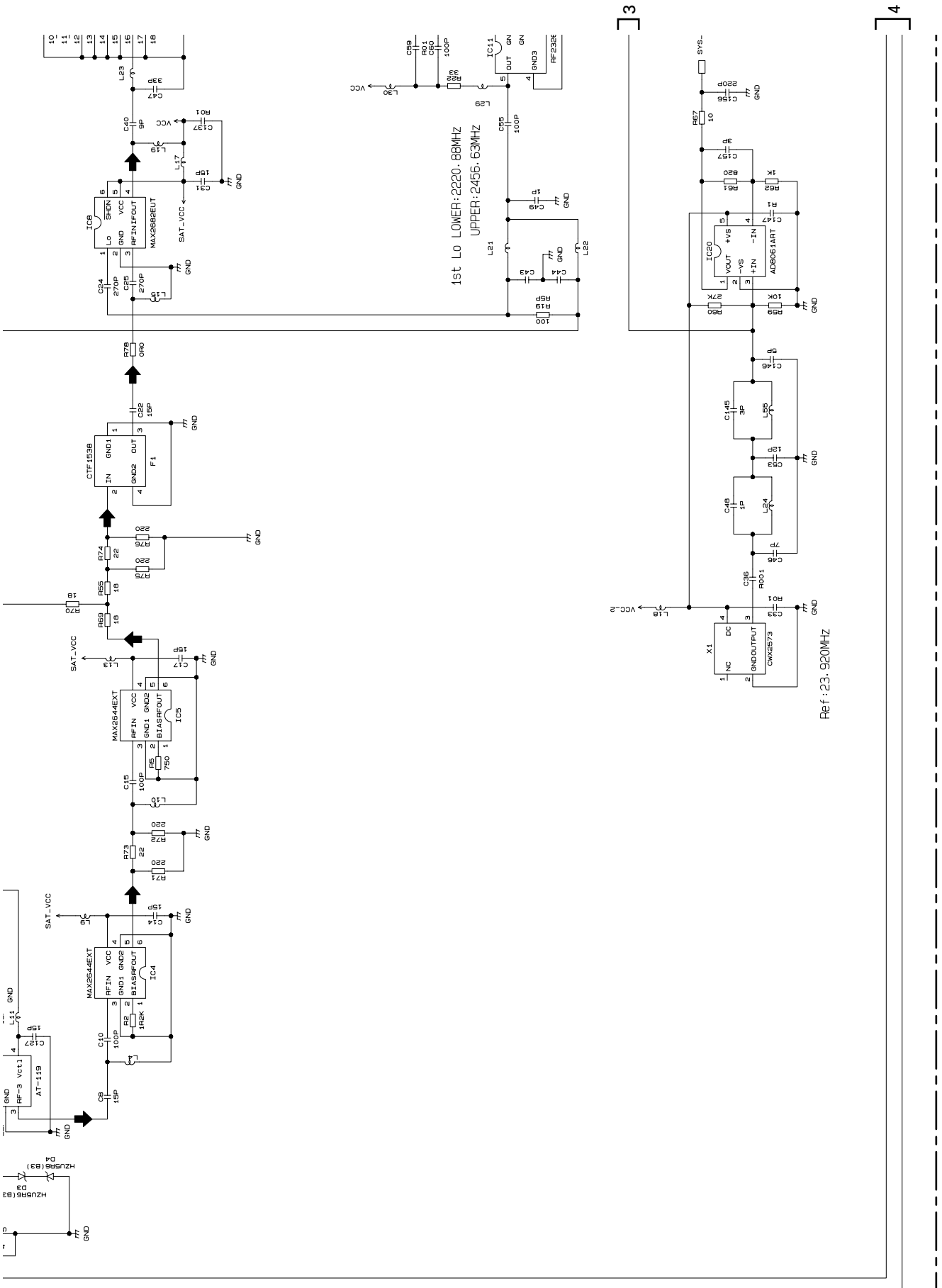
B RF MODULE



B-b

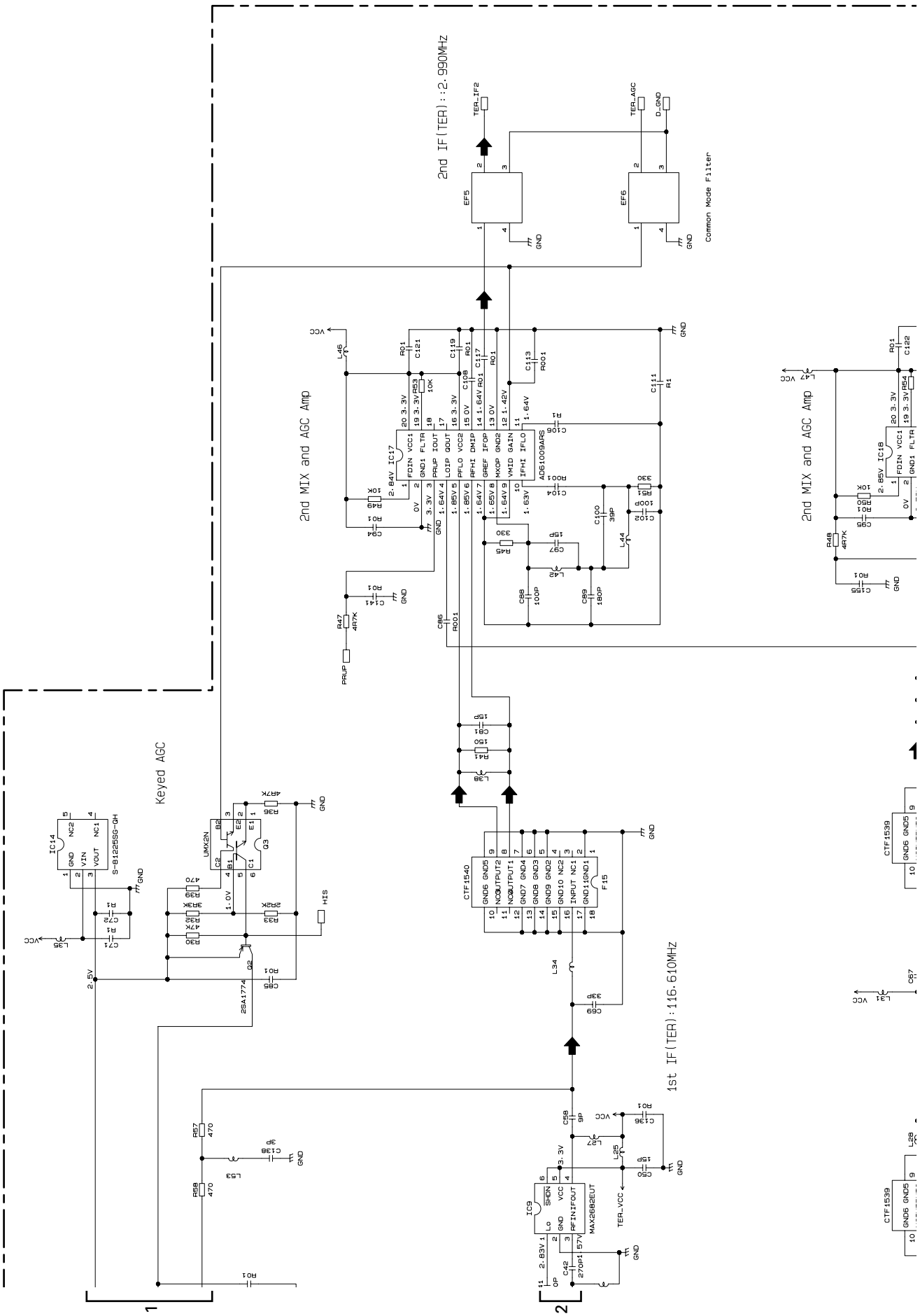

Keyed AGC
2nd MIX and AGC Amp
2nd IF(TER)::2.990MHz
1st IF(TER):116.610MHz
Common Mode Filter
2nd MIX and AGC Amp
2nd IF(SAT)::6.095MHz
1st IF(SAT):113.505MHz
Common Mode Filter
2.5GHz and IF PLL
2nd Lo:119.600MHz
CN3
CN502
HIS
SYS_CLK
SAT_IF2
SAT_AGC
TER_IF2
TER_AGC
D_GND
RF_AGC
CTL
CLK
DATA
LE
LOCK_DET
VS_ANT
VT_ANT

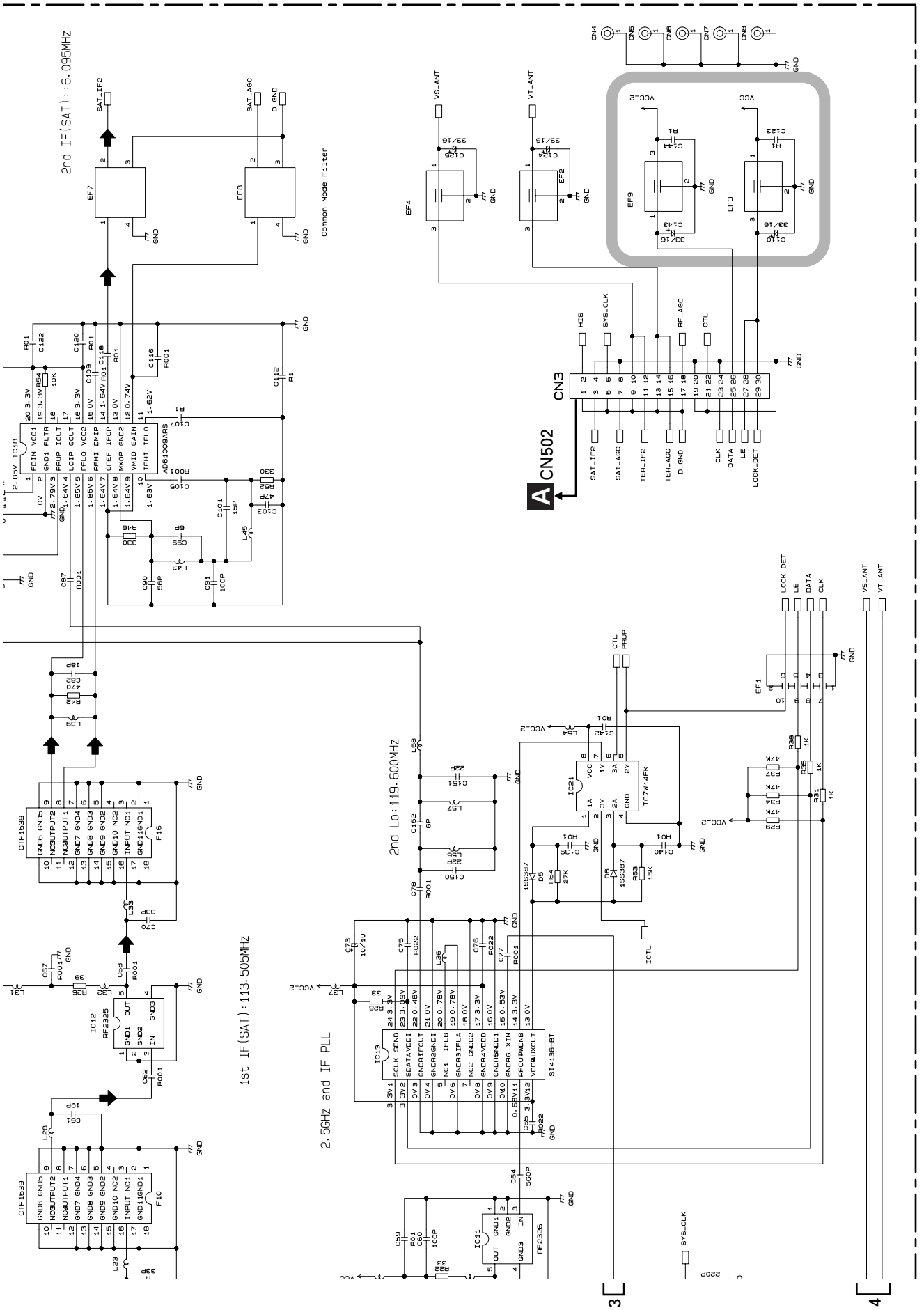

B RF MODULE
B-a
B-b
RF AGC DETECTOR
ANTENNA SELECT
CTL=0V : TER_IN → 2nd IF(TER)
CTL=3.3V : SAT_IN → 2nd IF(TER)
TER_IN CN1
SAT_IN CN2
RF AGC 2.2V ~ 0V
TER_VCC
SAT_VCC
MAX2644EXT
AT-119
CTF1538
ADB314ARM
HZU5R6(B3)


1st Lo LOWER:2220.88MHz
UPPER:2456.63MHz
Ref:23.920MHz
MAX2682EUT
MAX2644EXT
CTF1538
AT-119
ADB061ART
CWX2573
HZU5R6(B3)
SAT_VCC
VCC
GND

B-a B-b

B-a B-b


2nd IF(TER)::2.990MHz
TER-IF2
TER-AGC
D_GND
EF5
EF6
GND
Common Mode Filter
2nd MIX and AGC Amp
IC17
ADG100ARS
FDIN VCC1 FLTR IOUT PRUP GOUT LOIP QOUT PFLO VCC2 RFHI DMIP GREF IFOP MXOP GND2 VMID GAIN IFHI IFLO
VCC
PRUP
Keyed AGC
IC14
S-8122ASG-GH
GND VIN VOUT NC2 NC1
UMX2N
Q3
Q2
2SA1774
HIS
CTF1540
GND5 NCOUTPUT2 NCOUTPUT1 GND4 GND3 GND2 NC2 NC1 GND1
F15
1st IF(TER):116.610MHz
IC9
MAX2682EUT
SHDN Lo GND VCC RFINFOUT
TER-VCC
CTF1539
GND6 GND5

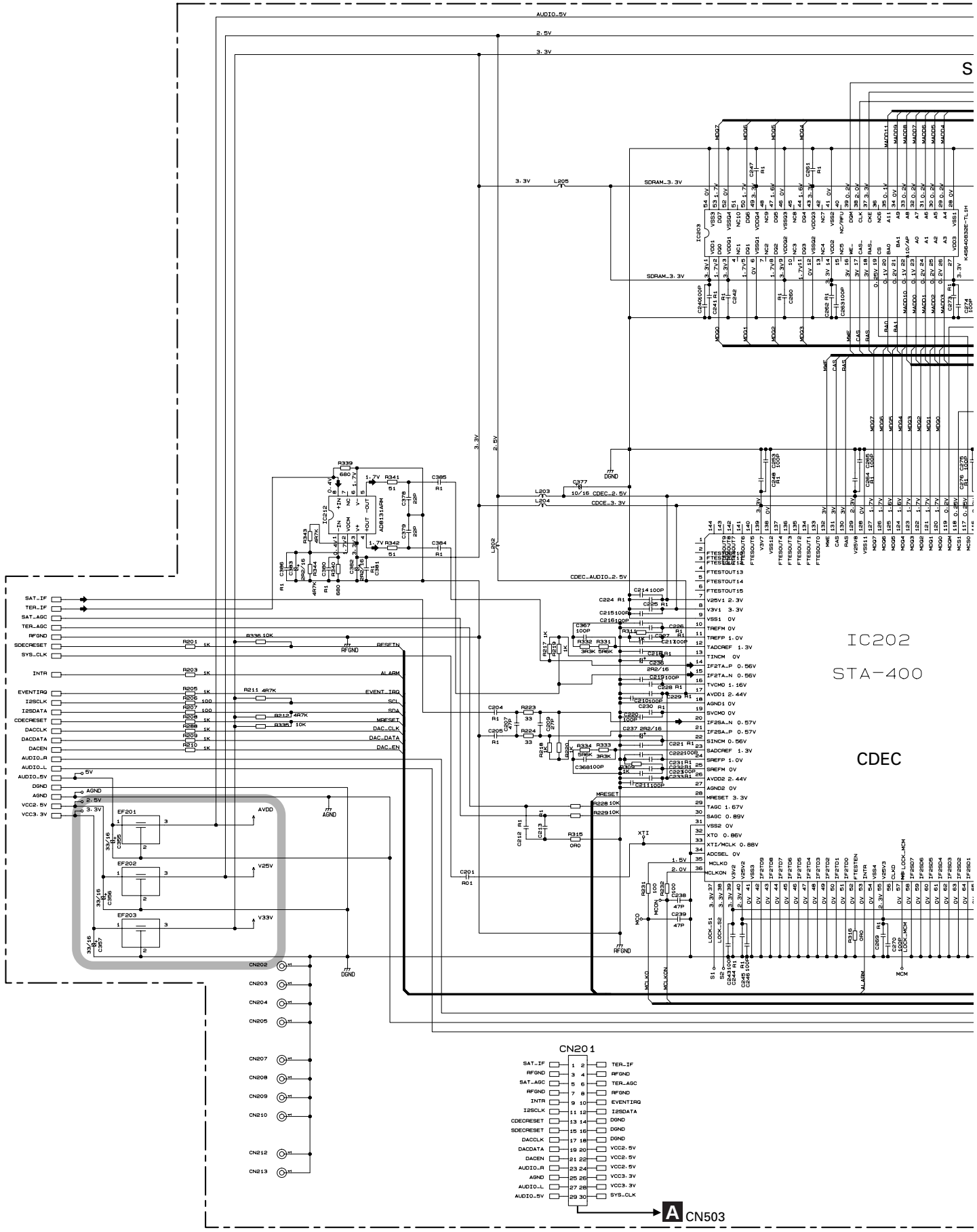

2nd IF(SAT)::6.095MHz
1st IF(SAT):113.505MHz
2nd Lo:119.600MHz
2.5GHz and IF PLL
Common Mode Filter
CN502
CN3
SAT_IF2
SAT_AGC
D_GND
TER_IF2
TER_AGC
CLK
DATA
LE
LOCK_DET
HIS
SYS_CLK
RF_AGC
CTL
VS_ANT
VT_ANT
IC18
IC12
IC11
IC13
IC21
EF1
EF2
EF3
EF4
EF7
EF8
EF9
F10
F16
CTF1539
RF2326
SI4136-BT
TC7W14FK

B-a B-b

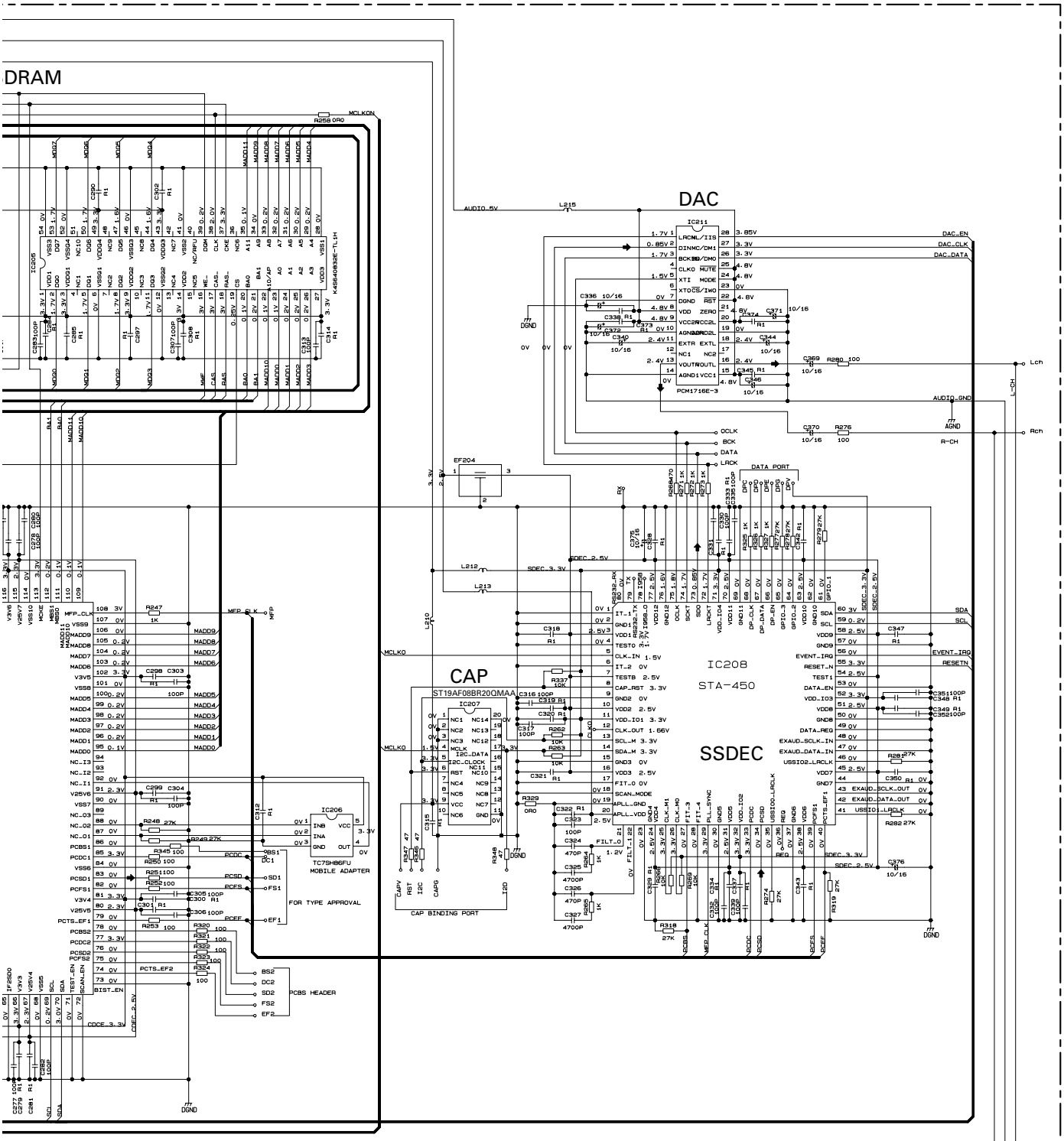
3.4 DSP MODULE(GUIDE PAGE)

C-a

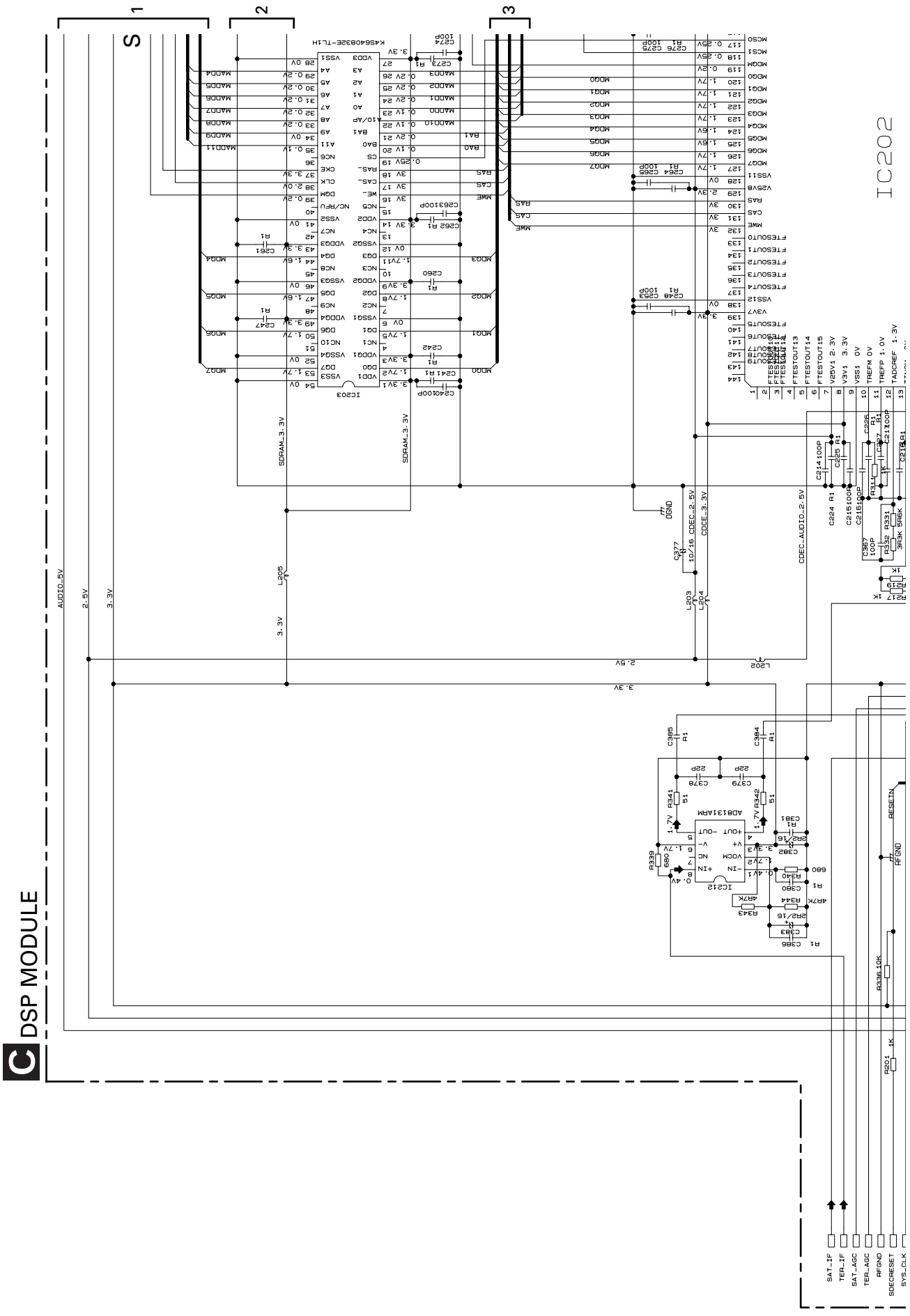
C DSP MODULE

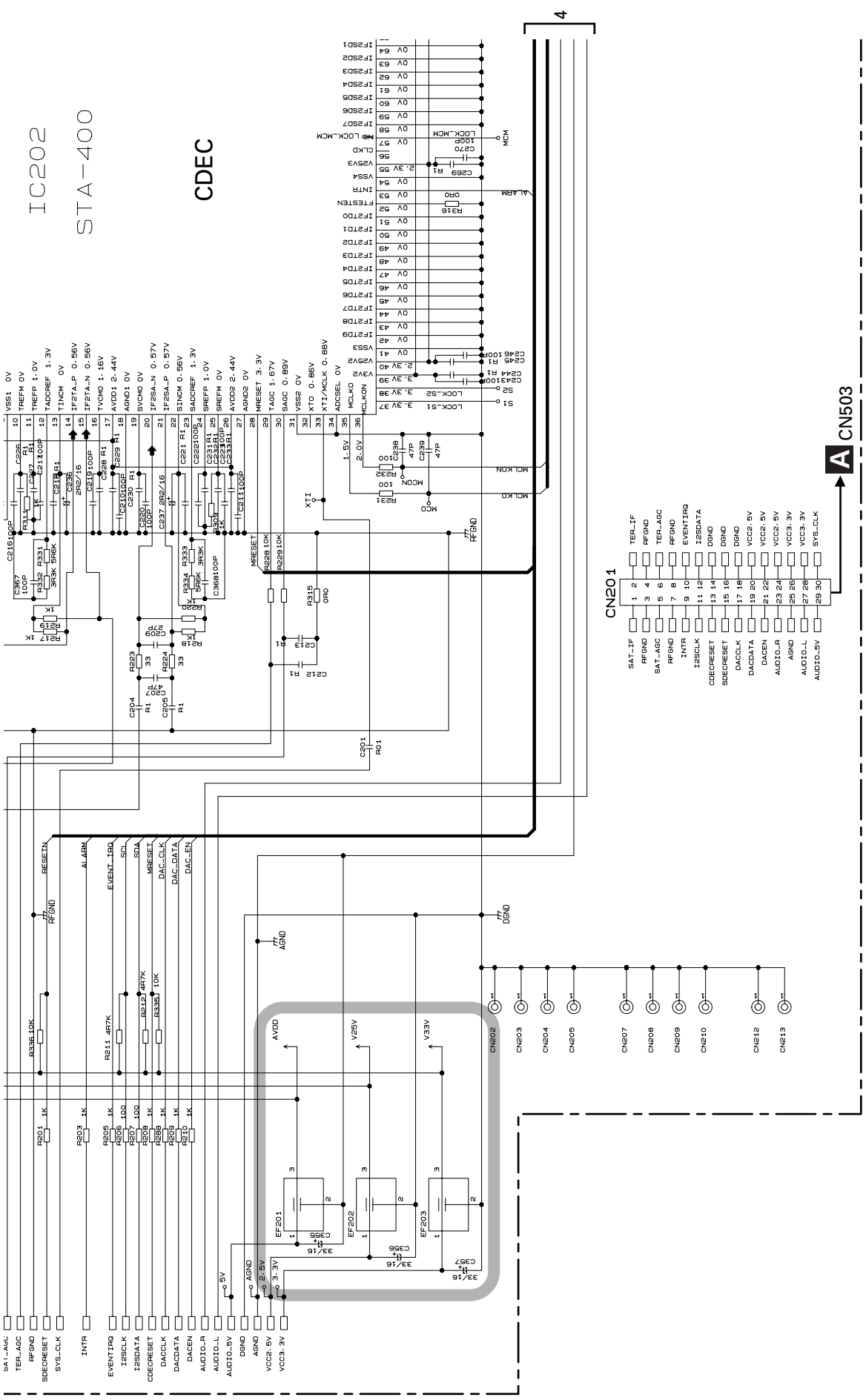


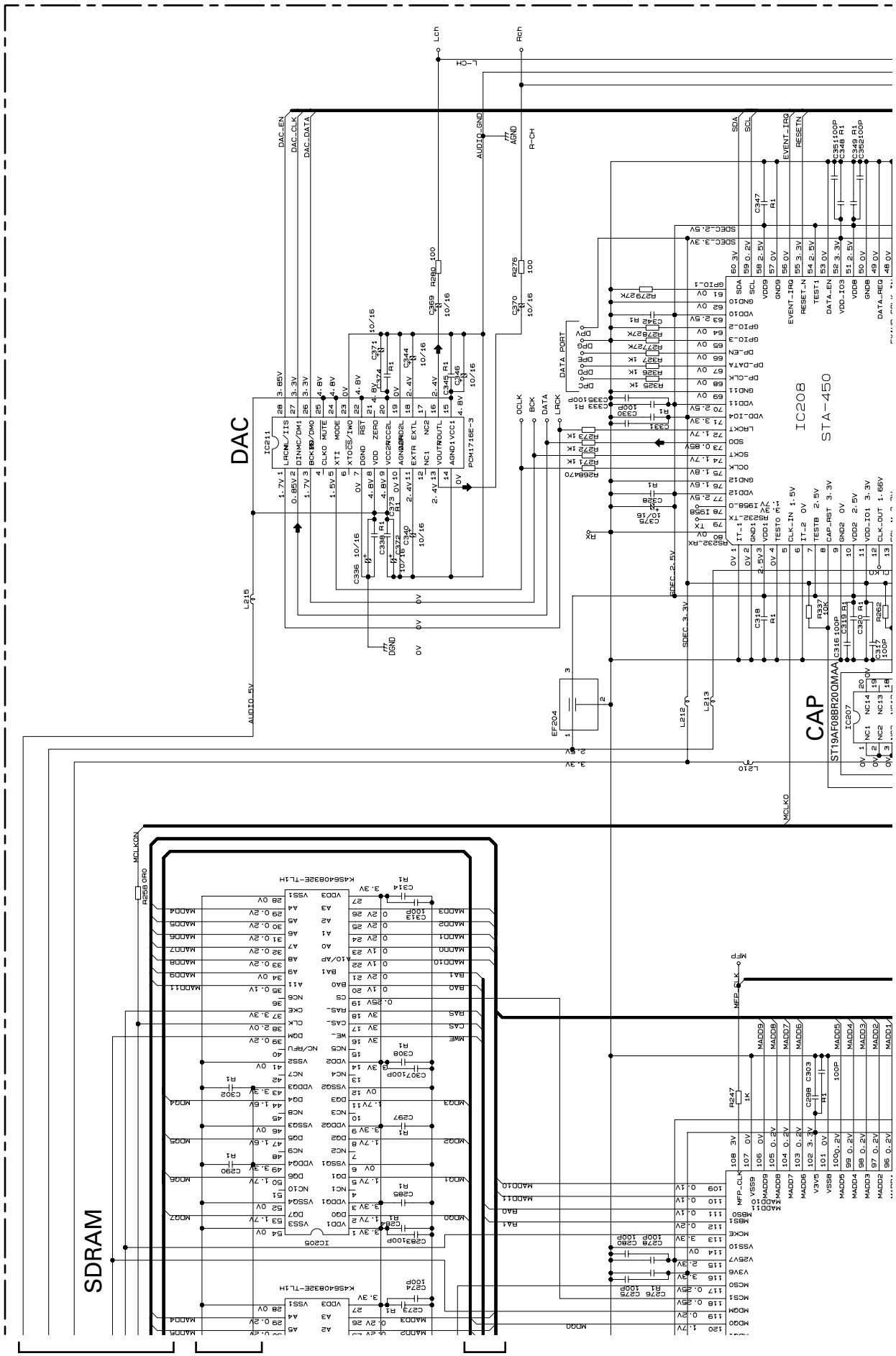
C-b

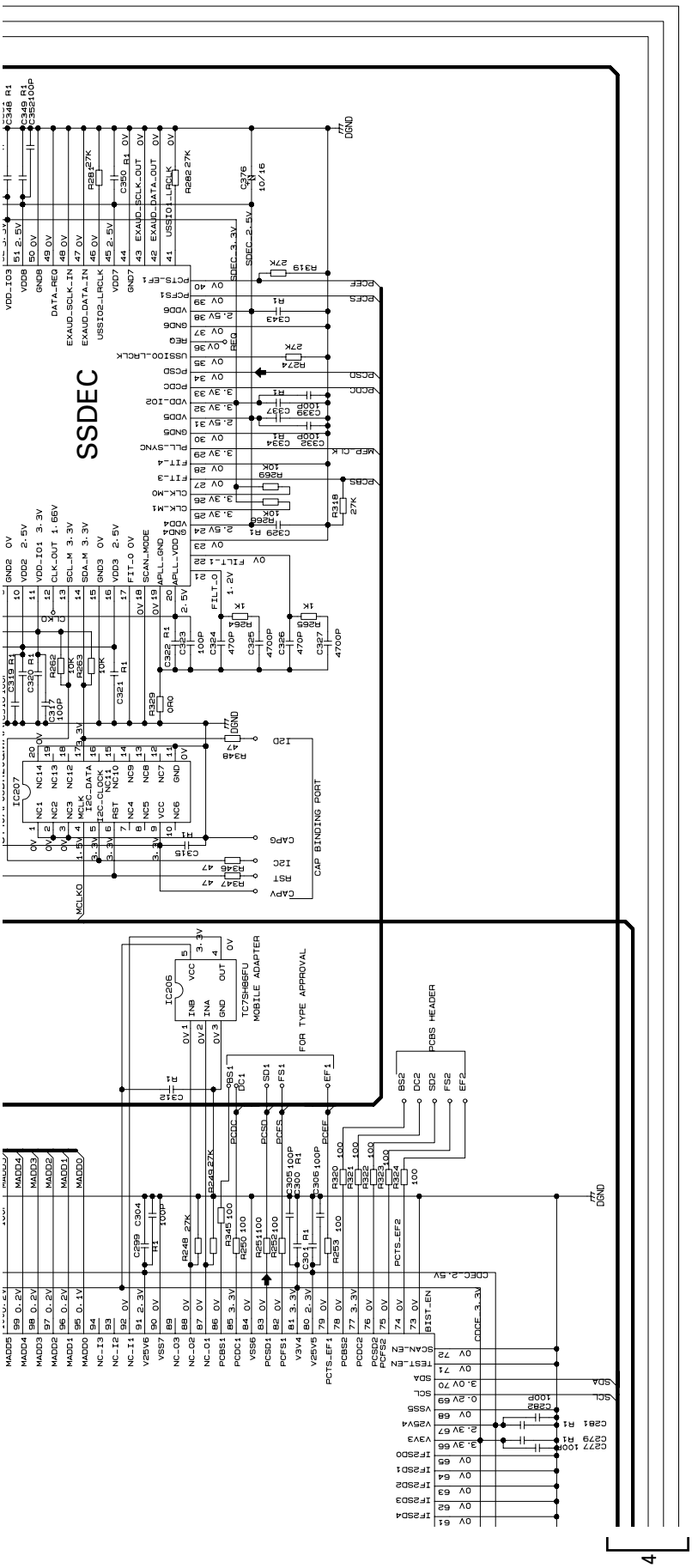

DRAM
DAC
CAP
SSDEC
IC208
STA-450
ST19AF08BR20QMAA
PCM1716E-3
TC7SH86FU
MOBILE ADAPTER
FOR TYPE APPROVAL
PCBS HEADER
CAP BINDING PORT
DATA PORT
DGND
AUDIO_GND
AGND
L-CH
R-CH
Lch
Rch
DAC_EN
DAC_CLK
DAC_DATA
SDA
SCL
EVENT_IRQ
RESET#
MCLKO
MFP_CLK
OCLK
BCK
DATA
LRCK

C-a C-b


C DSP MODULE
IC202
IC203
IC212
AD8131ARM
K4S640832E-TL1H
SDRAM_3.3V
AUDIO_5V
2.5V
3.3V
CDEC_2.5V
CDEC_3.3V
CDEC_AUDIO_2.5V
DGND
AGND
RESETIN
SAT_IF
TER_IF
SAT_AGC
TER_AGC
SDECRESET
SYS_CLK


IC202
STA-400
CDEC
CN503
CN201
CN202
CN203
CN204
CN205
CN207
CN208
CN209
CN210
CN212
CN213
EF201
EF202
EF203
AVDD
V25V
V33V
AGND
DGND
RFGND
MRESET
ALARM
EVENT_IRQ
SCL
SDA
DAC_CLK
DAC_DATA
DAC_EN
RESETN
SAT_AGC
TER_AGC
RFGND
SDECRESET
SYS_CLK
INTR
EVENTIRQ
I2SCLK
I2SDATA
CDECRESET
DACCLK
DACDATA
DACEN
AUDIO_R
AUDIO_L
AUDIO_5V
DGND
AGND
VCC2.5V
VCC3.3V
TER_IF
SAT_IF
SYS_CLK
MCLKO
MCLKON
XTI
XTO
LOCK_S1
LOCK_S2
LOCK_MCM


DAC
IC211
PCM1716E-3
IC208
STA-450
CAP
ST19AF08BR20QMAA
IC207
SDRAM
K4S640832E-TL1H
IC205
DATA PORT
L-CH
R-CH
AUDIO_GND
AUDIO_5V
DGND
AGND
SDEC_2.5V
SDEC_3.3V
MCLKO
MFP_CLK
EF204
L215
L212
L213
L210

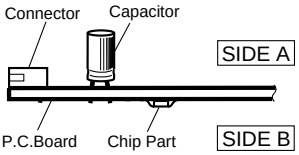

SSDEC
FOR TYPE APPROVAL
MOBILE ADAPTER
CAP BINDING PORT
PCBS HEADER

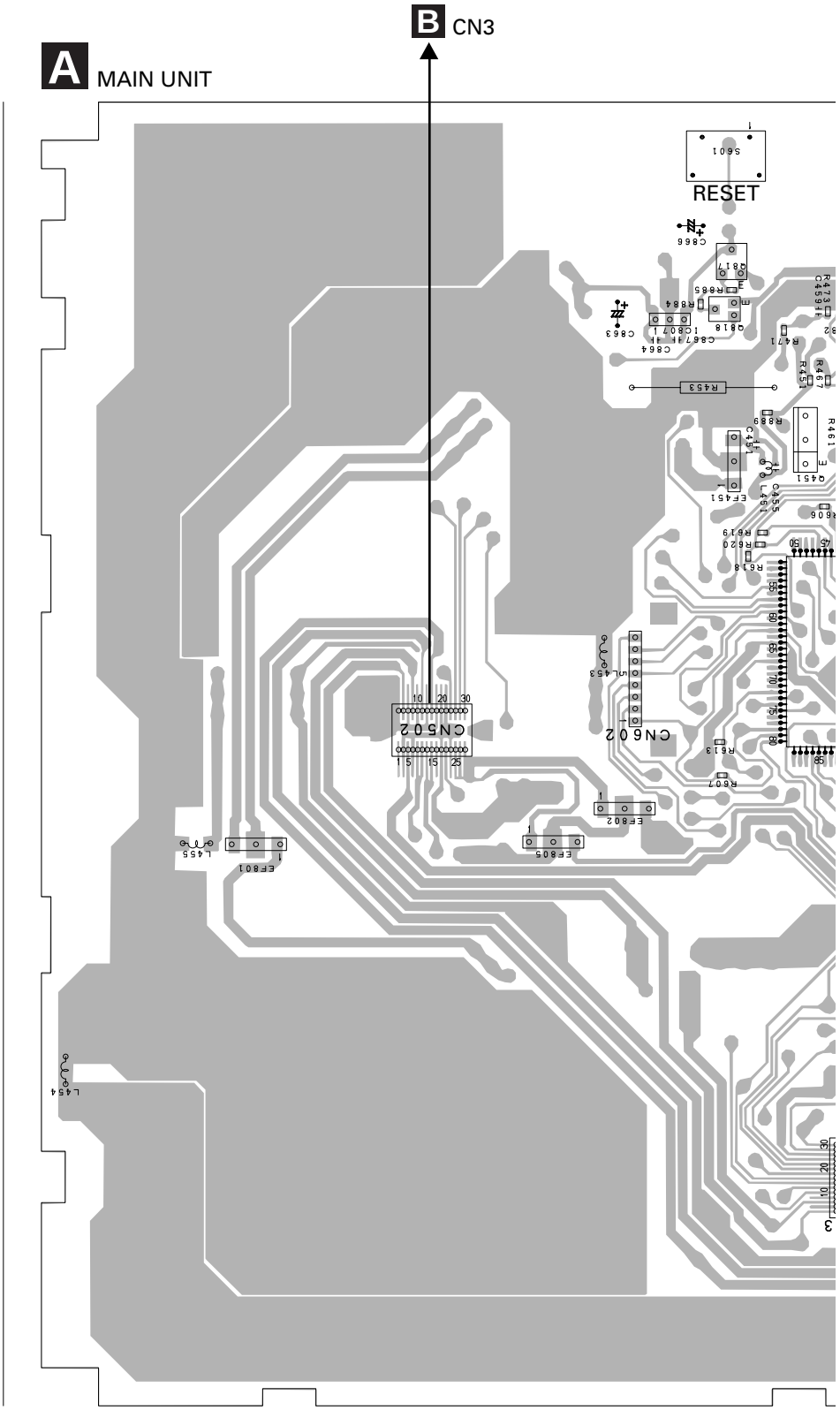
4. PCB CONNECTION DIAGRAM

4.1 MAIN UNIT

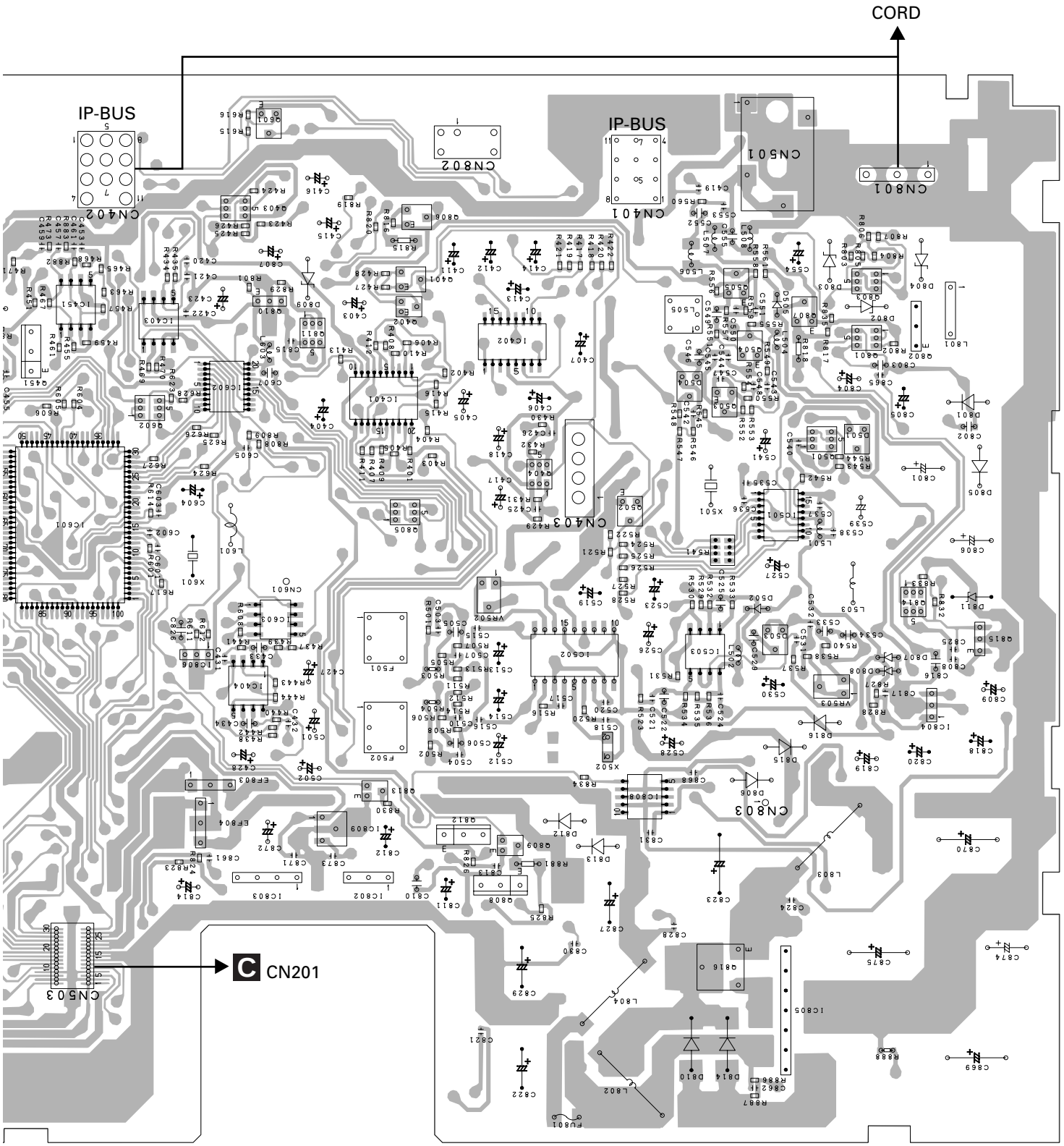
NOTE FOR PCB DIAGRAMS

1. The parts mounted on this PCB include all necessary parts for several destination.
   For further information for respective destinations, be sure to check with the schematic diagram.
2. Viewpoint of PCB diagrams

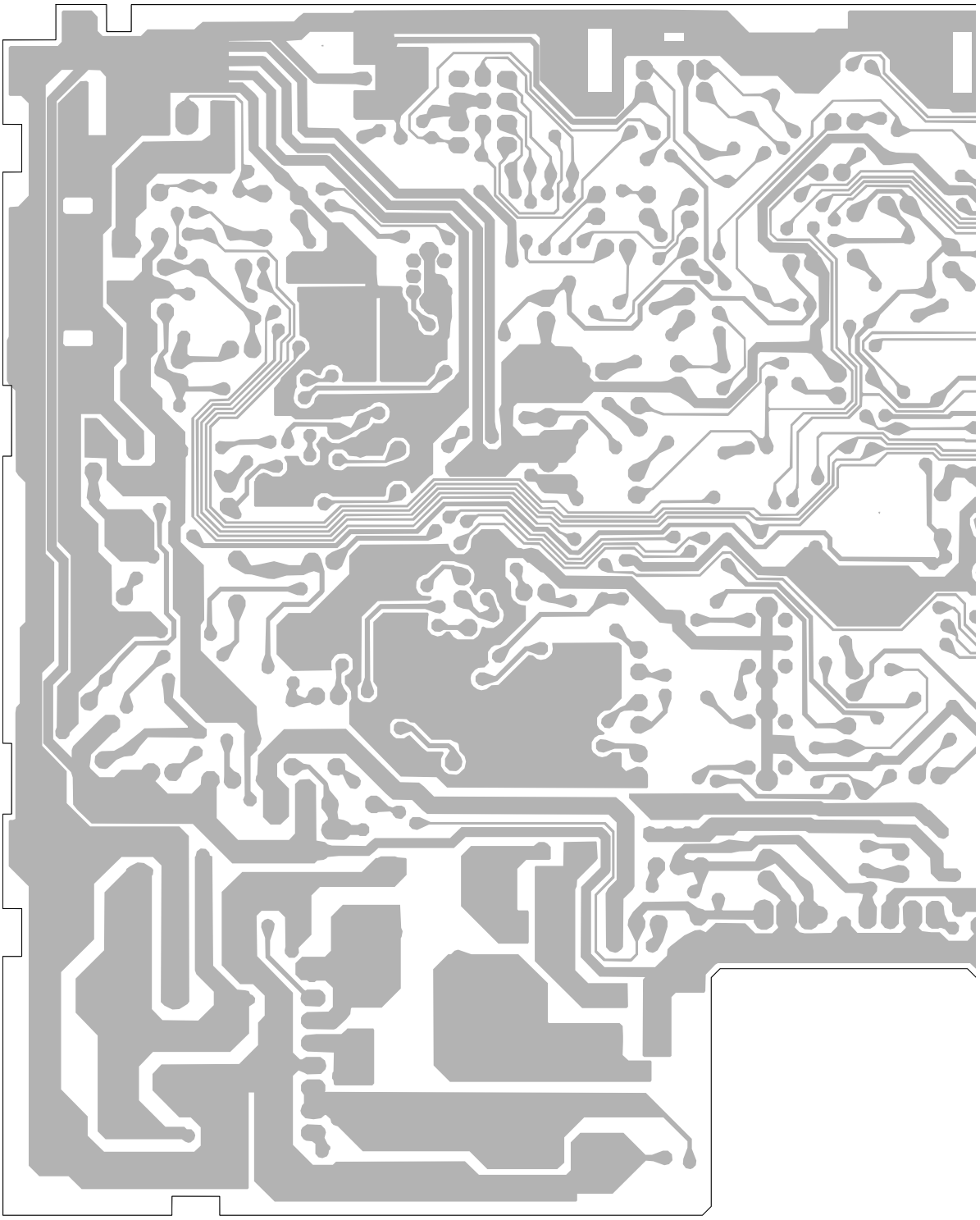




SIDE A

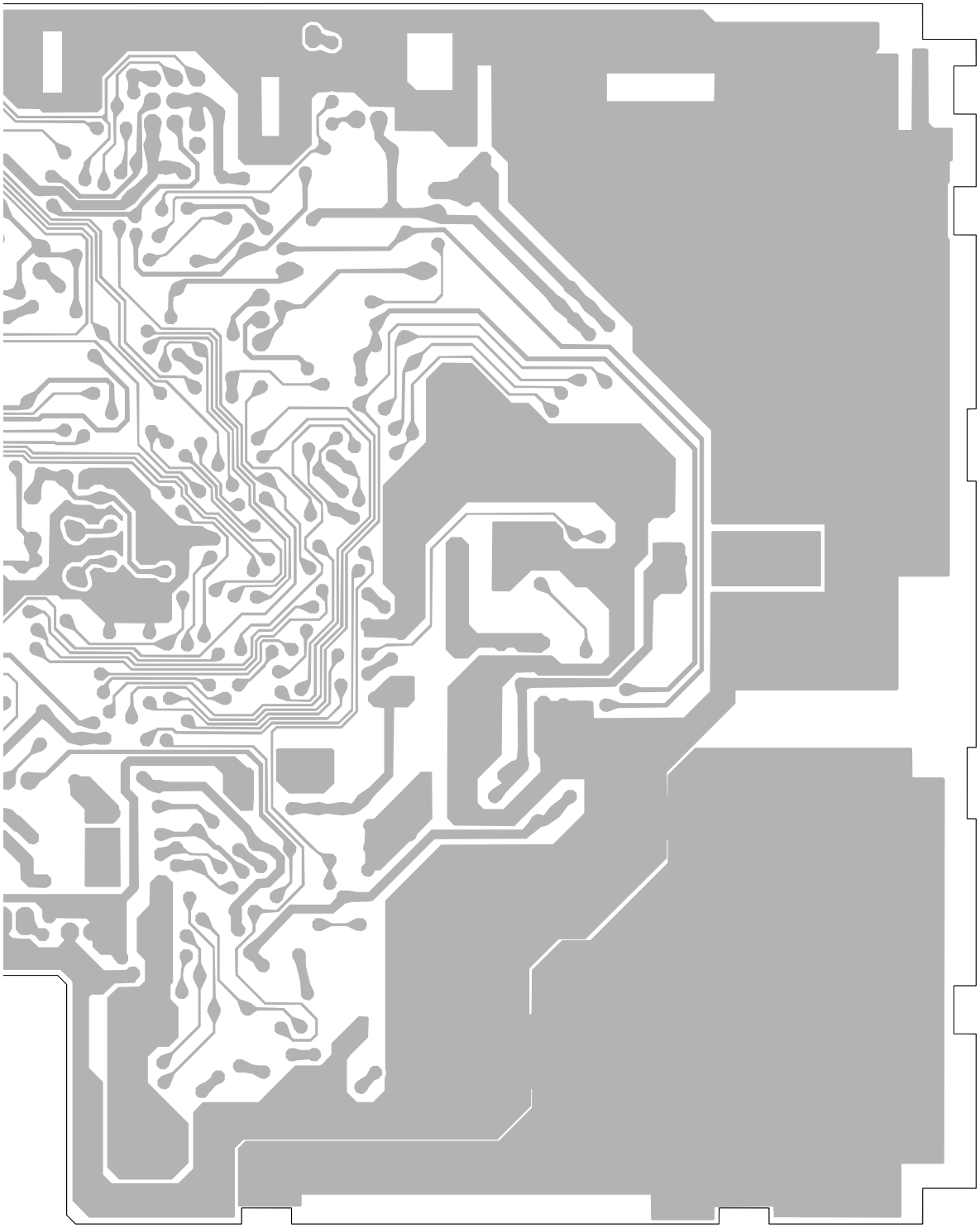

CORD
IP-BUS
IP-BUS
CN402
CN401
CN802
CN501
CN801
CN403
CN803
CN503
C CN201

A MAIN UNIT



SIDE B

A



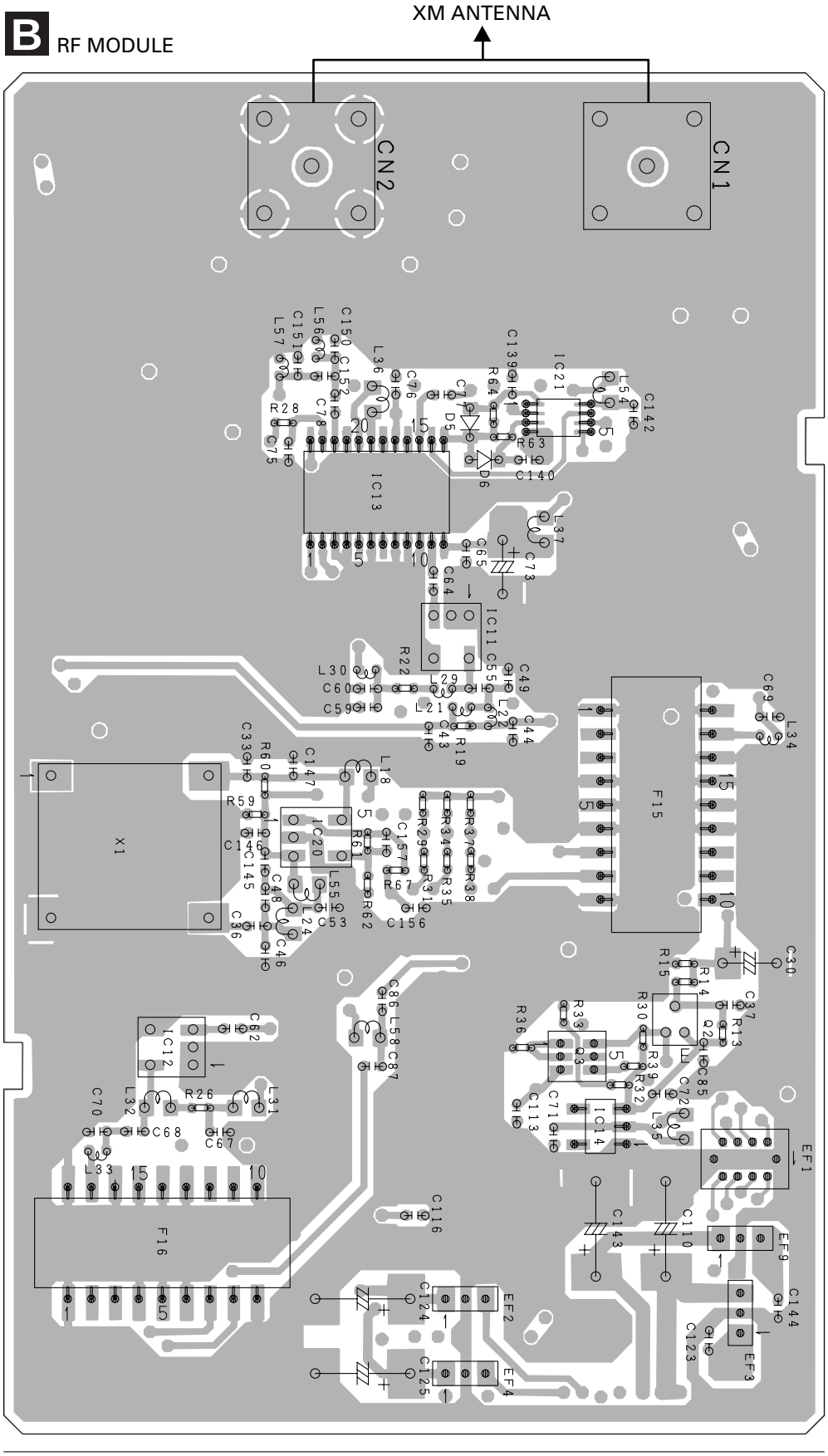
B

C

D

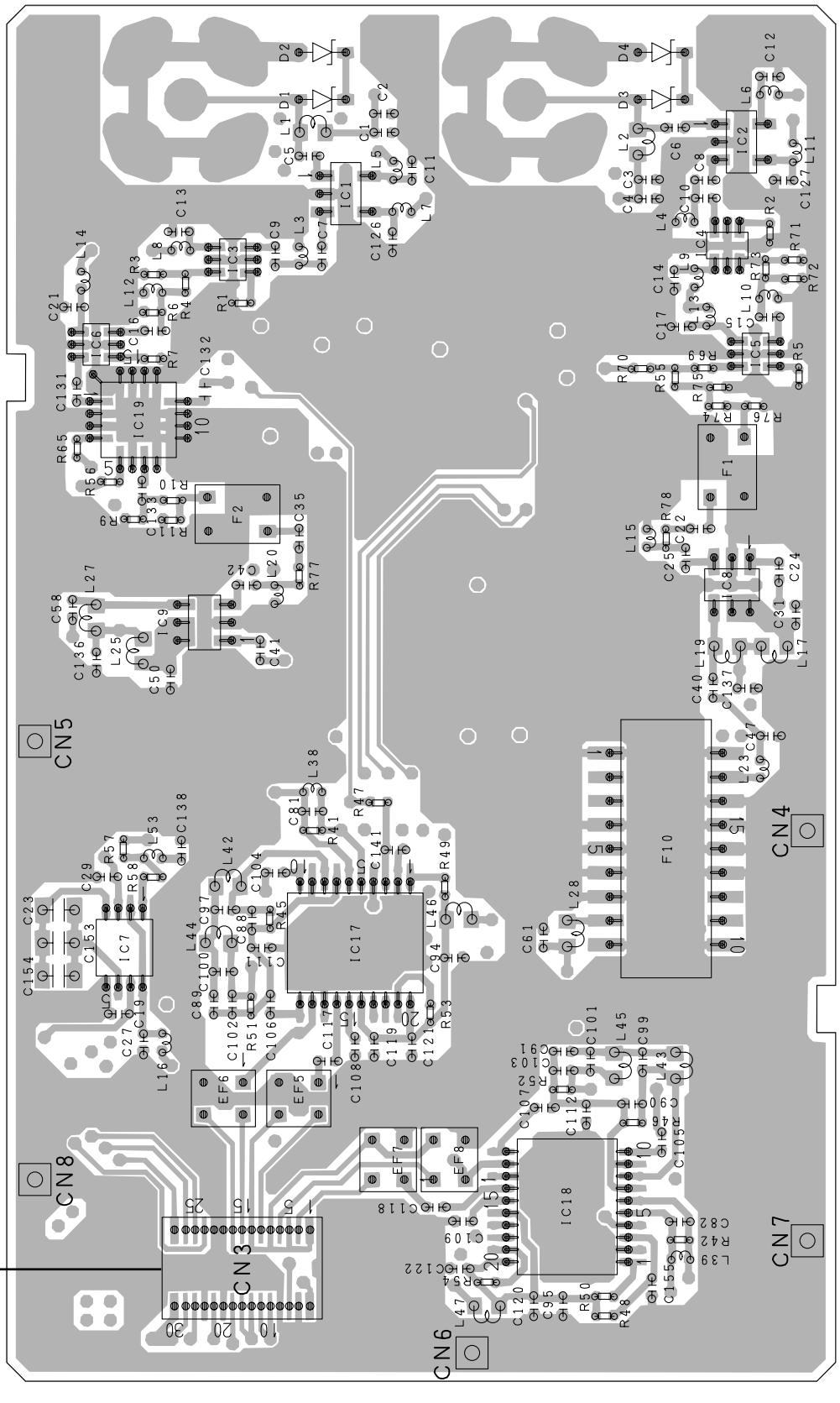
4.2 RF MODULE

SIDE A



SIDE B

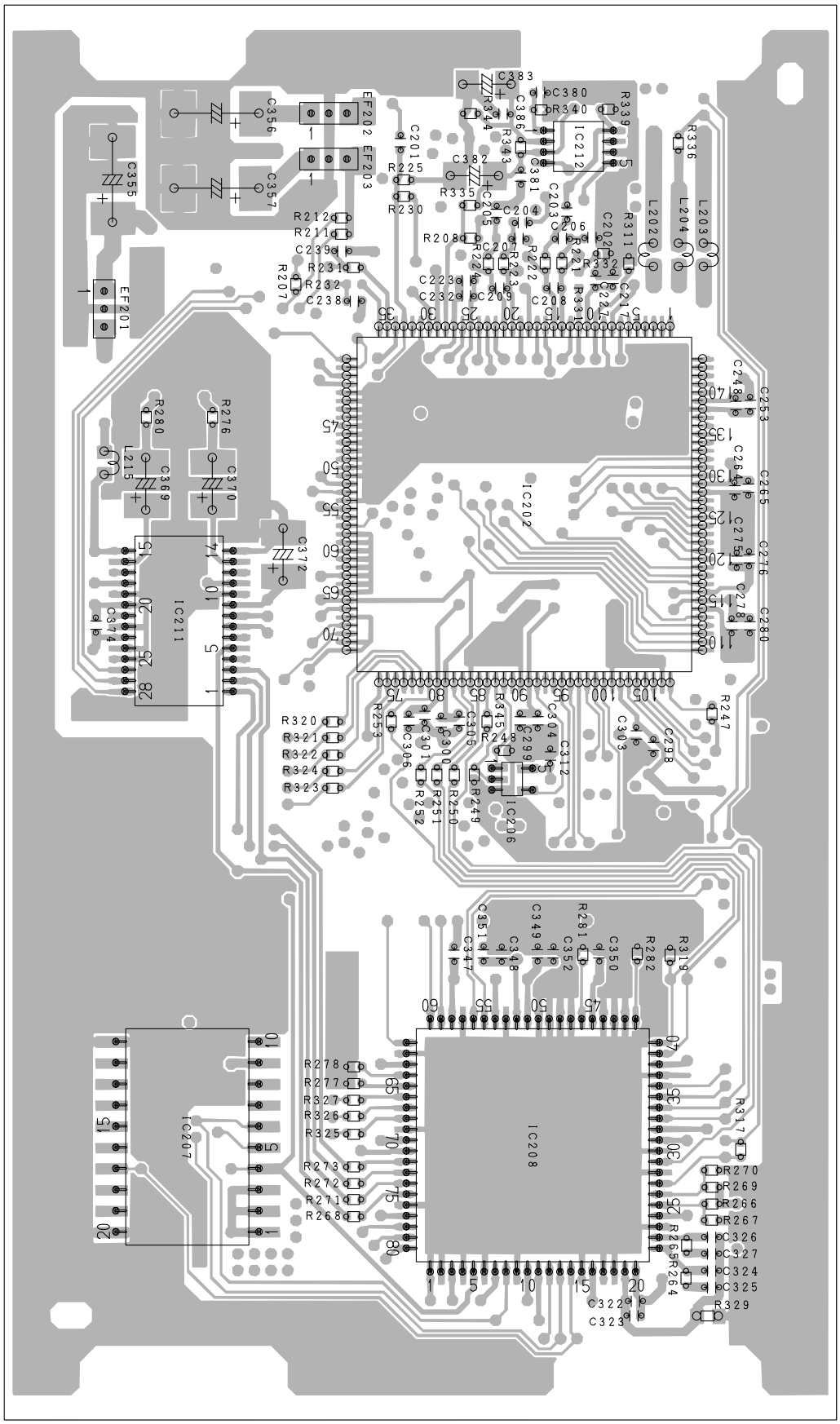
B RF MODULE



4.3 DSP MODULE

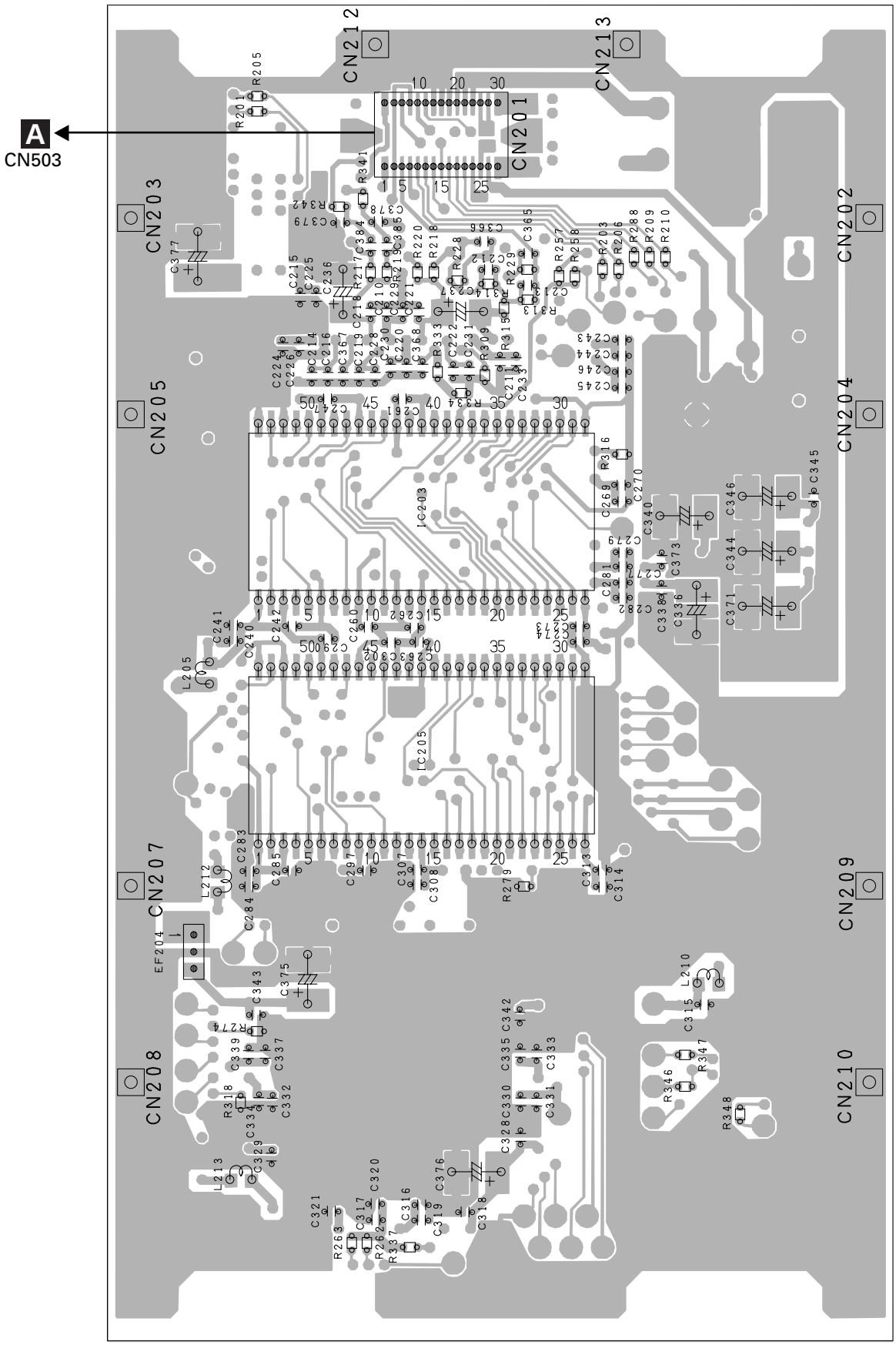
C DSP MODULE

SIDE A



C DSP MODULE

SIDE B



IC205 IC203

IC's

C 29

5. ELECTRICAL PARTS LIST

NOTES:

- Parts whose parts numbers are omitted are subject to being not supplied.
- The part numbers shown below indicate chip components.

Chip Resistor

RS1/○S○○○J,RS1/○○S○○○J

Chip Capacitor (except for CQS.....)

CKS....., CCS....., CSZS.....

B Unit Number : CWE1615
Unit Name : RF Module

MISCELLANEOUS

=====Circuit Symbol and No.		===Part Name	Part No.
IC	1	IC	AT-119
IC	2	IC	AT-119
IC	3	IC	MAX2644EXT
IC	4	IC	MAX2644EXT
IC	5	IC	MAX2644EXT
IC	6	IC	MAX2644EXT
IC	7	IC	AD8314ARM
IC	8	IC	MAX2682EUT
IC	9	IC	MAX2682EUT
IC	11	IC	RF2326
IC	12	IC	RF2325
IC	13	IC	SI4136-BT
IC	14	IC	S-81225SG-QH
IC	17	IC	AD61009ARS
IC	18	IC	AD61009ARS
IC	19	IC	SW-475
IC	20	IC	AD8061ART
IC	21	IC	TC7W14FK
Q	2	Transistor	2SA1774
Q	3	Transistor	UMX2N
D	1	Diode	HZU5R6(B3)
D	2	Diode	HZU5R6(B3)
D	3	Diode	HZU5R6(B3)
D	4	Diode	HZU5R6(B3)
D	5	Diode	1SS387
D	6	Diode	1SS387
L	1	Inductor	LCYB22NJ1608
L	2	Inductor	LCYB22NJ1608
L	3	Inductor	LCYB3N3S1005
L	4	Inductor	LCYB3N3S1005
L	5	Inductor	LCYB22NJ1005
L	6	Inductor	LCYB22NJ1005
L	7	Inductor	LCYB22NJ1005
L	8	Inductor	LCYB22NJ1005
L	9	Inductor	LCYB22NJ1005
L	10	Inductor	LCYB3N3S1005
L	11	Inductor	LCYB22NJ1005
L	12	Inductor	LCYB3N3S1005
L	13	Inductor	LCYB22NJ1005
L	14	Inductor	LCYB22NJ1005
L	15	Inductor	LCYB1N8S1005
L	16	Inductor	LCYB22NJ1005
L	17	Inductor	LCYB22NJ1608
L	18	Inductor	CTF1346
L	19	Inductor	LCYBR18J1608
L	20	Inductor	LCYB3N9S1005
L	21	Inductor	LCYB3N9S1005
L	22	Inductor	LCYB3N9S1005
L	23	Inductor	LCYBR12J1005
L	24	Inductor	LCTC2R2K1608
L	25	Inductor	LCYB22NJ1608
L	27	Inductor	LCYBR18J1608
L	28	Inductor	LCYBR18J1608
L	29	Inductor	LCYB82NJ1005
L	30	Inductor	LCYB22NJ1005
L	31	Inductor	CTF1346
L	32	Inductor	LCYBR22J1608
L	33	Inductor	LCYBR12J1005
L	34	Inductor	LCYBR10J1005
L	35	Inductor	CTF1346
L	36	Inductor	LCYB2N2S1608
L	37	Inductor	LCTC1R0K1608
L	38	Inductor	LCYB82NJ1005
L	39	Inductor	LCYB82NJ1005
L	42	Inductor	LCTC120K1608
L	43	Inductor	LCTC6R8K1608
L	44	Inductor	LCTC100K1608
L	45	Inductor	LCTC5R6K1608
L	46	Inductor	CTF1346
L	47	Inductor	CTF1346
L	53	Inductor	LCYB2N7S1005
L	54	Inductor	CTF1346
L	55	Inductor	LCTC1R8K1608
L	56	Inductor	LCYB68NJ1005
L	57	Inductor	LCYB68NJ1005
L	58	Inductor	LCYBR22J1608
X	1	TCXO 23.920MHz	CWX2573
F	15	Filter	CTF1540
F	16	Filter	CTF1539
F	10	Filter	CTF1539
F	2	Filter	CTF1538
F	1	Filter	CTF1538
EF	1	EMI Filter	CCG1145
EF	2	EMI Filter	CCG1142
EF	3	EMI Filter	CCG1142
EF	4	EMI Filter	CCG1142
EF	5	EMI Filter	CCG1147
EF	6	EMI Filter	CCG1147
EF	7	EMI Filter	CCG1147
EF	8	EMI Filter	CCG1147
EF	9	EMI Filter	CCG1142

RESISTORS

R	1		RS1/16SS122J
R	2		RS1/16SS122J
R	3		RS1/16SS101J
R	4		RS1/16SS680J
R	5		RS1/16SS751J
R	6		RS1/16SS101J
R	7		RS1/16SS751J
R	9		RS1/16SS431J
R	10		RS1/16SS120J
R	11		RS1/16SS431J

=====Circuit Symbol and No.		===Part Name	Part No.
R	13		RS1/16SS562J
R	14		RS1/16SS362J
R	15		RS1/16SS362J
R	19		RS1/16SS101J
R	22		RS1/16SS330J
R	26		RS1/16SS390J
R	28		RS1/16SS330J
R	29		RS1/16SS473J
R	30		RS1/16SS473J
R	31		RS1/16SS102J
R	32		RS1/16SS332J
R	33		RS1/16SS222J
R	34		RS1/16SS473J
R	35		RS1/16SS102J
R	36		RS1/16SS472J
R	37		RS1/16SS473J
R	38		RS1/16SS102J
R	39		RS1/16SS471J
R	41		RS1/16SS151J
R	42		RS1/16SS471J
R	45		RS1/16SS331J
R	46		RS1/16SS331J
R	47		RS1/16SS472J
R	48		RS1/16SS472J
R	49		RS1/16SS103J
R	50		RS1/16SS103J
R	51		RS1/16SS331J
R	52		RS1/16SS331J
R	53		RS1/16SS103J
R	54		RS1/16SS103J
R	55		RS1/16SS180J
R	56		RS1/16SS102J
R	57		RS1/16SS471J
R	58		RS1/16SS471J
R	59		RS1/16SS103J
R	60		RS1/16SS273J
R	61		RS1/16SS821J
R	62		RS1/16SS102J
R	63		RS1/16SS153J
R	64		RS1/16SS273J
R	65		RS1/16SS102J
R	67		RS1/16SS100J
R	69		RS1/16SS180J
R	70		RS1/16SS180J
R	71		RS1/16SS221J
R	72		RS1/16SS221J
R	73		RS1/16SS220J
R	74		RS1/16SS220J
R	75		RS1/16SS221J
R	76		RS1/16SS221J
R	77		RS1/16SS0R0J
R	78		RS1/16SS0R0J

CAPACITORS

=====Circuit Symbol and No.		===Part Name	Part No.
C	1		CKSSYB102K50
C	2		CCSSCH220J50
C	3		CKSSYB102K50
C	4		CCSSCH220J50
C	5		CCSSCH150J50
C	6		CCSSCH220J50
C	7		CCSSCH150J50
C	8		CCSSCH150J50
C	9		CCSSCH101J50
C	10		CCSSCH101J50
C	11		CCSSCH150J50
C	12		CCSSCH150J50
C	13		CCSSCH150J50
C	14		CCSSCH150J50
C	15		CCSSCH101J50
C	16		CCSSCH101J50
C	17		CCSSCH150J50
C	19		CKSSYB103K16
C	21		CCSSCH150J50
C	22		CCSSCH150J50
C	23		CKSQYB225K10
C	24		CCSSCH271J25
C	25		CCSSCH271J25
C	27		CCSSCH150J50
C	29		CKSSYB103K16
C	30		CSZS3R3M16
C	31		CCSSCH150J50
C	33		CKSSYB103K16
C	35		CCSSCH150J50
C	36		CKSSYB102K50
C	37		CKSSYB103K16
C	40		CCSSCH9R0D50
C	41		CCSSCH271J25
C	42		CCSSCH271J25
C	43	0.5pF	CCG1112
C	44	0.5pF	CCG1112
C	46		CCSSCH7R0D50
C	47		CCSSCH330J50
C	48		CCSSCK1R0C50
C	49	1.0pF	CCG1114
C	50		CCSSCH150J50
C	53		CCSSCH120J50
C	55		CCSSCH101J50
C	58		CCSSCH9R0D50
C	59		CKSSYB103K16
C	60		CCSSCH101J50
C	61		CCSSCH100D50
C	62		CKSSYB102K50
C	64		CKSSYB561K50
C	65		CKSSYB223K16
C	67		CKSSYB102K50
C	68		CKSSYB102K50
C	69		CCSSCH330J50
C	70		CCSSCH330J50
C	71		CKSSYB104K10
C	72		CKSSYB104K10
C	73		CSZS100M10
C	75		CKSSYB223K16
C	76		CKSSYB223K16
C	77		CKSSYB102K50
C	78		CKSSYB102K50
C	81		CCSSCH150J50
C	82		CCSSCH180J50
C	85		CKSSYB103K16
C	86		CKSSYB102K50
C	87		CKSSYB102K50
C	88		CCSSCH101J50
C	89		CCSSCH181J25
C	90		CCSSCH560J50
C	91		CCSSCH101J50
C	94		CKSSYB103K16
C	95		CKSSYB103K16
C	97		CCSSCH150J50
C	99		CCSSCH6R0D50
C	100		CCSSCH390J50

=====Circuit Symbol and No.		===Part Name	Part No.
C	101		CCSSCH150J50
C	102		CCSSCH101J50
C	103		CCSSCH470J50
C	104		CKSSYB102K50
C	105		CKSSYB102K50
C	106		CKSSYB104K10
C	107		CKSSYB104K10
C	108		CKSSYB103K16
C	109		CKSSYB103K16
C	110		CSZSC330M16
C	111		CKSSYB104K10
C	112		CKSSYB104K10
C	113		CKSSYB102K50
C	116		CKSSYB102K50
C	117		CKSSYB103K16
C	118		CKSSYB103K16
C	119		CKSSYB103K16
C	120		CKSSYB103K16
C	121		CKSSYB103K16
C	122		CKSSYB103K16
C	123		CKSSYB104K10
C	124		CSZSC330M16
C	125		CSZSC330M16
C	126		CCSSCH150J50
C	127		CCSSCH150J50
C	131		CCSSCH470J50
C	132		CCSSCH470J50
C	133		CCSSCH470J50
C	136		CKSSYB103K16
C	137		CKSSYB103K16
C	138		CCSSCJ3R0C50
C	139		CKSSYB103K16
C	140		CKSSYB103K16
C	141		CKSSYB103K16
C	142		CKSSYB103K16
C	143		CSZSC330M16
C	144		CKSSYB104K10
C	145		CCSSCJ3R0C50
C	146		CCSSCH5R0C50
C	147		CKSSYB104K10
C	150		CCSSCH220J50
C	151		CCSSCH220J50
C	152		CCSSCH6R0D50
C	153		CKSQYB225K10
C	154		CKSQYB225K10
C	155		CKSSYB103K16
C	156		CCSSCH221J50
C	157		CCSSCJ3R0C50

C Unit Number : CWX2555
Unit Name : DSP Module

MISCELLANEOUS

IC	202	IC	STA-400
IC	203	IC	K4S640832E-TL1H
IC	205	IC	K4S640832E-TL1H
IC	206	IC	TC7SH86FU
IC	207	IC	ST19AF08BR20QMAA
IC	208	IC	STA-450
IC	211	IC	PCM1716E-3
IC	212	IC	AD8131ARM
L	202	Inductor	CTF1473
L	203	Inductor	CTF1464
L	204	Inductor	CTF1473
L	205	Inductor	CTF1464
L	210	Inductor	CTF1473
L	212	Inductor	CTF1473
L	213	Inductor	CTF1473

=====Circuit Symbol and No.		===Part Name	Part No.
L	215	Inductor	CTF1473
EF	201	EMI Filter	CCG1142
EF	202	EMI Filter	CCG1142
EF	203	EMI Filter	CCG1142
EF	204	EMI Filter	CCG1142

RESISTORS

R	201		RS1/16SS102J
R	203		RS1/16SS102J
R	205		RS1/16SS102J
R	206		RS1/16SS101J
R	207		RS1/16SS101J
R	208		RS1/16SS102J
R	209		RS1/16SS102J
R	210		RS1/16SS102J
R	211		RS1/16SS472J
R	212		RS1/16SS472J
R	217		RS1/16SS102J
R	218		RS1/16SS102J
R	219		RS1/16SS102J
R	220		RS1/16SS102J
R	223		RS1/16SS330J
R	224		RS1/16SS330J
R	228		RS1/16SS103J
R	229		RS1/16SS103J
R	231		RS1/16SS101J
R	232		RS1/16SS101J
R	247		RS1/16SS102J
R	248		RS1/16SS273J
R	249		RS1/16SS273J
R	250		RS1/16SS101J
R	251		RS1/16SS101J
R	252		RS1/16SS101J
R	253		RS1/16SS101J
R	258		RS1/16SS0R0J
R	262		RS1/16SS103J
R	263		RS1/16SS103J
R	264		RS1/16SS102J
R	265		RS1/16SS102J
R	266		RS1/16SS103J
R	268		RS1/16SS471J
R	269		RS1/16SS103J
R	271		RS1/16SS102J
R	272		RS1/16SS102J
R	273		RS1/16SS102J
R	274		RS1/16SS273J
R	276		RS1/16SS101J
R	277		RS1/16SS273J
R	278		RS1/16SS273J
R	279		RS1/16SS273J
R	280		RS1/16SS101J
R	281		RS1/16SS273J
R	282		RS1/16SS273J
R	288		RS1/16SS102J
R	309		RS1/16SS102J
R	311		RS1/16SS102J
R	315		RS1/16SS0R0J
R	316		RS1/16SS0R0J
R	318		RS1/16SS273J
R	319		RS1/16SS273J
R	320		RS1/16SS101J
R	321		RS1/16SS101J
R	322		RS1/16SS101J
R	323		RS1/16SS101J
R	324		RS1/16SS101J
R	325		RS1/16SS102J
R	326		RS1/16SS102J

=====Circuit Symbol and No.	===Part Name	Part No.
R 327		RS1/16SS102J
R 329		RS1/16S0R0J
R 331		RS1/16SS562J
R 332		RS1/16SS332J
R 333		RS1/16SS332J
R 334		RS1/16SS562J
R 335		RS1/16SS103J
R 336		RS1/16SS103J
R 337		RS1/16SS103J
R 339		RS1/16SS681J
R 340		RS1/16SS681J
R 341		RS1/16SS510J
R 342		RS1/16SS510J
R 343		RS1/16SS472J
R 344		RS1/16SS472J
R 345		RS1/16SS101J
R 346		RS1/16SS470J
R 347		RS1/16SS470J
R 348		RS1/16SS470J

CAPACITORS

C 201		CKSSYB103K16
C 204		CKSSYB104K10
C 205		CKSSYB104K10
C 207		CCSSCH470J50
C 209		CCSSCH270J50
C 210		CCSSCH101J50
C 211		CCSSCH101J50
C 212		CKSSYB104K10
C 213		CKSSYB104K10
C 214		CCSSCH101J50
C 215		CCSSCH101J50
C 216		CCSSCH101J50
C 217		CCSSCH101J50
C 218		CKSSYB104K10
C 219		CCSSCH101J50
C 220		CCSSCH101J50
C 221		CKSSYB104K10
C 222		CCSSCH101J50
C 223		CCSSCH101J50
C 224		CKSSYB104K10
C 225		CKSSYB104K10
C 226		CKSSYB104K10
C 227		CKSSYB104K10
C 228		CKSSYB104K10
C 229		CKSSYB104K10
C 230		CKSSYB104K10
C 231		CKSSYB104K10
C 232		CKSSYB104K10
C 233		CKSSYB104K10
C 236		CSZS2R2M16
C 237		CSZS2R2M16
C 238		CCSSCH470J50
C 239		CCSSCH470J50
C 240		CCSSCH101J50
C 241		CKSSYB104K10
C 242		CKSSYB104K10
C 243		CCSSCH101J50
C 244		CKSSYB104K10
C 245		CKSSYB104K10
C 246		CCSSCH101J50
C 247		CKSSYB104K10
C 248		CKSSYB104K10
C 253		CCSSCH101J50
C 260		CKSSYB104K10
C 261		CKSSYB104K10

=====Circuit Symbol and No.	===Part Name	Part No.
C 262		CKSSYB104K10
C 263		CCSSCH101J50
C 264		CKSSYB104K10
C 265		CCSSCH101J50
C 269		CKSSYB104K10
C 270		CCSSCH101J50
C 273		CKSSYB104K10
C 274		CCSSCH101J50
C 275		CCSSCH101J50
C 276		CKSSYB104K10
C 277		CCSSCH101J50
C 278		CCSSCH101J50
C 279		CKSSYB104K10
C 280		CCSSCH101J50
C 281		CKSSYB104K10
C 282		CCSSCH101J50
C 283		CCSSCH101J50
C 284		CKSSYB104K10
C 285		CKSSYB104K10
C 290		CKSSYB104K10
C 297		CKSSYB104K10
C 298		CKSSYB104K10
C 299		CKSSYB104K10
C 300		CKSSYB104K10
C 301		CKSSYB104K10
C 302		CKSSYB104K10
C 303		CCSSCH101J50
C 304		CCSSCH101J50
C 305		CCSSCH101J50
C 306		CCSSCH101J50
C 307		CCSSCH101J50
C 308		CKSSYB104K10
C 312		CKSSYB104K10
C 313		CCSSCH101J50
C 314		CKSSYB104K10
C 315		CKSSYB104K10
C 316		CCSSCH101J50
C 317		CCSSCH101J50
C 318		CKSSYB104K10
C 319		CKSSYB104K10
C 320		CKSSYB104K10
C 321		CKSSYB104K10
C 322		CKSSYB104K10
C 323		CCSSCH101J50
C 324		CKSSYB471K50
C 325		CKSSYB472K25
C 326		CKSSYB471K50
C 327		CKSSYB472K25
C 328		CKSSYB104K10
C 329		CKSSYB104K10
C 330		CCSSCH101J50
C 331		CKSSYB104K10
C 332		CCSSCH101J50
C 333		CKSSYB104K10
C 334		CKSSYB104K10
C 335		CCSSCH101J50
C 336		CSZSR100M16
C 337		CKSSYB104K10
C 338		CKSSYB104K10
C 339		CCSSCH101J50
C 340		CSZSR100M16
C 342		CKSSYB104K10
C 343		CKSSYB104K10
C 344		CSZSR100M16
C 345		CKSSYB104K10

=====Circuit Symbol and No.		===Part Name	Part No.
C	346		CSZSR100M16
C	347		CKSSYB104K10
C	348		CKSSYB104K10
C	349		CKSSYB104K10
C	350		CKSSYB104K10
C	351		CCSSCH101J50
C	352		CCSSCH101J50
C	355		CSZSC330M16
C	356		CSZSC330M16
C	357		CSZSC330M16
C	367		CCSSCH101J50
C	368		CCSSCH101J50
C	369		CSZSR100M16
C	370		CSZSR100M16
C	371		CSZSR100M16
C	372		CSZSR100M16
C	373		CKSSYB104K10
C	374		CKSSYB104K10
C	375		CSZSR100M16
C	376		CSZSR100M16
C	377		CSZSR100M16
C	378		CCSSCH220J50
C	379		CCSSCH220J50
C	380		CKSSYB104K10
C	381		CKSSYB104K10
C	382		CSZS2R2M16
C	383		CSZS2R2M16
C	384		CKSSYB104K10
C	385		CKSSYB104K10
C	386		CKSSYB104K10

A Unit Number : CWM7659
Unit Name : Main Unit

MISCELLANEOUS

IC	401	IC	BA3131FS
IC	402	IC	TA2050F
IC	403	IC	HA12187FP
IC	404	IC	NJM4558MD
IC	451	IC	NJM2904M
IC	601	IC	PD5680A
IC	602	IC	TC74VHCT541AFT
IC	802	IC	UPC7805AHF
IC	803	IC	PQ30RV1
IC	805	IC	BP5250
IC	806	IC	S-80827ANUP-EDQ
IC	807	IC	HA178L05UA
Q	401	Transistor	2SA1162
Q	402	Transistor	DTC144EU
Q	403	Transistor	IMH3A
Q	451	Transistor	2SB1243
Q	601	Transistor	2SC2412K
Q	602	Transistor	IMD3A
Q	801	Transistor	IMD3A
Q	802	Transistor	2SC3673
Q	803	Transistor	IMX1
Q	808	Transistor	2SA1674
Q	809	Transistor	DTC123EU
Q	810	Transistor	2SD1664
Q	811	Transistor	IMD3A
Q	814	Transistor	IMD3A
Q	815	Transistor	2SD1664
Q	816	Transistor	2SJ529S
Q	817	Transistor	2SA1162
Q	818	Transistor	DTC114EU

=====Circuit Symbol and No.		===Part Name	Part No.
D	801	Diode	ERA15-02VH
D	802	Diode	HZS9L(B1)
D	804	Diode	HZS7L(B1)
D	805	Diode	ERA15-02VH
D	809	Diode	HZS6L(B1)
D	810	Diode	F2J4S
D	811	Diode	HZS4LL(B)
D	812	Diode	ERA15-02VH
D	813	Diode	ERA15-02VH
D	814	Diode	F2J4S
D	816	Diode	ERA15-02VH
L	451	Inductor	LCYB47NJ1608
L	601	Ferri-Inductor	LAU2R2K
L	603	Inductor	CTF1399
L	801	Choke Coil 1.4mH	CTH1129
L	802	Coil	CTH1246
L	803	Coil	CTH1246
L	804	Coil	CTH1246
X	601	Radiator 10.00MHz	CSS1475
S	601	Switch(RESET)	CSG1059
FU	801	Fuse 2A	CEK1190
F	501	Filter	CTF1333
EF	451	EMI Filter	CCG1051
EF	801	EMI Filter	CCG1051
EF	802	EMI Filter	CCG1051
EF	803	EMI Filter	CCG1051
EF	804	EMI Filter	CCG1051
		DSP Module	CWX2555
		RF Module	CWE1615

RESISTORS

R	401		RS1/16SS473J
R	402		RS1/16SS473J
R	403		RS1/16SS103J
R	404		RS1/16SS103J
R	405		RS1/16SS103J
R	406		RS1/16SS103J
R	407		RS1/16SS473J
R	408		RS1/16SS473J
R	409		RS1/16SS562J
R	410		RS1/16SS562J
R	411		RS1/16SS473J
R	412		RS1/16SS473J
R	413		RS1/16SS473J
R	415		RS1/16SS473J
R	416		RS1/16SS473J
R	417		RS1/16SS102J
R	418		RS1/16SS102J
R	419		RS1/16SS223J
R	420		RS1/16SS223J
R	421		RS1/16SS181J
R	422		RS1/16SS181J
R	423		RS1/16SS102J
R	424		RS1/16SS102J
R	425		RS1/16SS223J
R	426		RS1/16SS223J
R	427		RS1/16SS103J
R	428		RS1/16SS333J
R	434		RS1/16SS101J
R	435		RS1/16SS101J
R	437		RS1/16SS103J
R	438		RS1/16SS103J
R	439		RS1/16SS103J
R	440		RS1/16SS103J
R	441		RS1/16SS103J
R	442		RS1/16SS103J

=====Circuit Symbol and No.		===Part Name	Part No.
R	443		RS1/16SS473J
R	444		RS1/16SS473J
R	451		RS1/16SS103J
R	453		RS2PMF2R2J
R	455		RS1/16SS222J
R	457		RS1/16SS563J
R	459		RS1/16SS681J
R	461		RS1/16SS391J
R	463		RS1/16SS103J
R	465		RS1/16SS563J
R	467		RS1/16SS472J
R	469		RS1/16SS102J
R	470		RS1/16SS272J
R	471		RS1/16SS103J
R	473		RS1/16SS103J
R	601		RS1/16SS0R0J
R	605		RS1/16SS473J
R	606		RS1/16SS473J
R	607		RS1/16SS473J
R	611		RS1/16SS822J
R	612		RS1/16SS102J
R	613		RS1/16SS473J
R	614		RS1/16SS473J
R	615		RS1/16SS102J
R	616		RS1/16SS473J
R	617		RS1/16SS473J
R	618		RS1/16SS473J
R	619		RS1/16SS473J
R	620		RS1/16SS473J
R	623		RS1/16SS392J
R	624		RS1/16SS102J
R	625		RS1/16SS102J
R	626		RS1/16SS102J
R	627		RS1/16SS102J
R	628		RS1/16SS102J
R	801		RS1/16SS472J
R	802		RS1/16SS182J
R	806		RS1/16SS473J
R	807		RS1/16SS103J
R	808		RS1/16SS473J
R	809		RS1/16SS473J
R	823		RS1/16SS3601D
R	824		RS1/16SS2201D
R	825		RS1/16SS103J
R	829		RS1/16SS332J
R	832		RS1/16SS123J
R	833		RS1/16SS273J
R	835		RS1/16SS1R0J
R	881		RS1/4SA102J
R	882		RS1/16SS103J
R	883		RS1/16SS103J
R	884		RS1/16SS152J
R	885		RS1/16SS333J
R	886		RS1/16SS3601D
R	887		RS1/16SS2201D

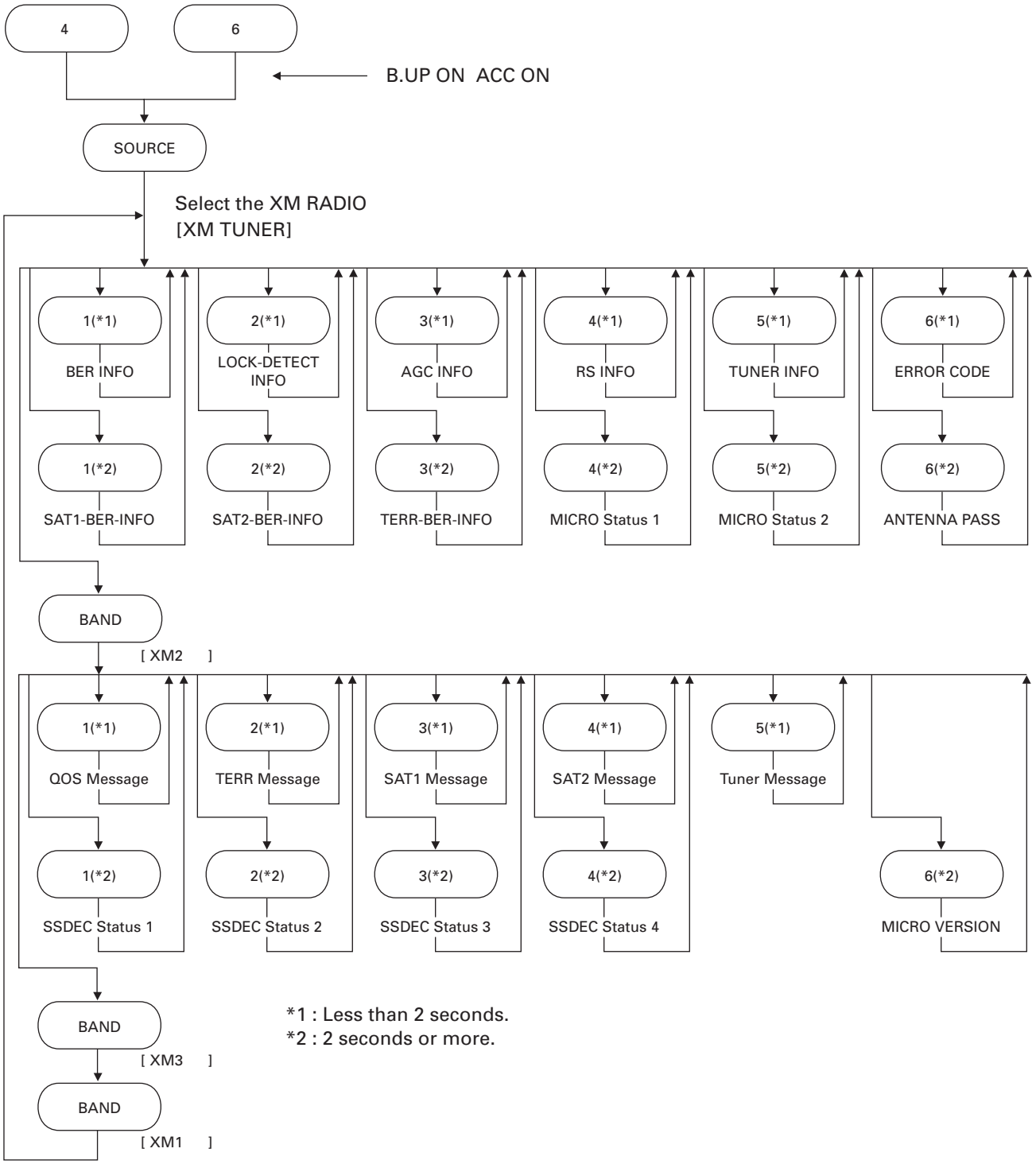
CAPACITORS

C	403		CEAT470M10
C	404		CEJQ220M10
C	405		CEAT101M16
C	406		CEJQ220M10
C	407		CEJQ220M10
C	409		CEJQNP100M10
C	410		CEJQNP100M10
C	411		CEJQ1R0M50
C	412		CEJQ1R0M50
C	413		CEJQ1R0M50
C	414		CEJQ1R0M50
C	415		CEAT100M50
C	416		CEAT100M50
C	419		CKSSYB104K10
C	420		CKSSYB102K50
C	421		CKSSYB102K50
C	422		CKSSYB103K16
C	423		CEAT470M10
C	427		CEAT100M50
C	428		CEAT100M50
C	431		CKSSYB152K50
C	432		CKSSYB152K50
C	433		CCSRCH221J50
C	434		CCSRCH221J50
C	451		CKSSYB104K10
C	453		CKSSYB104K10
C	455		CKSSYB104K10
C	457		CKSSYB104K10
C	459		CKSSYB103K16
C	461		CKSSYB103K16
C	601		CCSSCH200J50
C	602		CCSSCH150J50
C	603		CCSSCH101J50
C	604		CEJQ4R7M35
C	605		CCSSCH101J50
C	607		CKSRYB105K6R3
C	801	470µF/16V	CCH1183
C	802		CKSRYB104K16
C	803		CKSRYB104K16
C	804		CEAT100M50
C	805		CEJQ220M16
C	806	1000µF/16V	CCH1149
C	808		CKSSYB103K16
C	809		CEAT470M10
C	810		CKSRYB104K16
C	811		CEJQ220M16
C	812		CEAT331M6R3
C	813		CKSSYB104K10
C	814		CEAT470M10
C	815		CKSSYB472K25
C	821		CKSSYB472K25
C	822	470µF/25V	CCH1337-A-P35
C	823	1000µF/16V	CCH1411-A-P35
C	824		CKSSYB102K50
C	825		CKSSYB472K25
C	826		CKSQYB225K10
C	827	470µF/25V	CCH1337-A-P35
C	828		CKSSYB472K25
C	829	470µF/25V	CCH1337-A-P35
C	830		CKSSYB472K25
C	861		CKSSYB104K10
C	862		CKSSYB104K10
C	863		CEJQ220M16
C	864		CKSSYB103K16
C	866		CEJQ220M16
C	867		CKSSYB103K16

6. ADJUSTMENT

6.1 TEST MODE

● **Flow Chart**



The following head units are exceptional so that their entering ways to the test mode are different from others. Test mode starting procedure reset while pressing the **3** and **5** keys together.

KEH-P5010R/X1M/EW
KEH-4011/X1M/EE
KEH-P5011/X1M/EE
KEH-4010R/X1M/EW
KEH-P4010RB/X1M/EW
KEH-P4013R/X1M/EW
KEH-5015/X1M/ES
KEH-P4010/X1M/UC
KEH-P4015/X1M/ES

● Diagnostic mode

1. To Enter the Diagnostic mode
Reset while pressing the 4 and 6 keys together.

2. To Exit from the Diagnostic mode
Reset the system.

3. Contents of the Diagnostic mode

Number	Mode name	Entry method	Summerized Description
1	BER INFO	Press the number 1 key for less than two seconds while in XM1 of the Diagnostic mode.	Error rate (one effective digit) for the Bitabi signals of the terrestrial wave + satellite wave 1 + satellite wave 2.
2	LOCK-DETECT INFO	Press the number 2 key for less than two seconds while in XM1 of the Diagnostic mode.	Decryption LOCK for the terrestrial wave + satellite wave 1 + satellite wave 2 (MCM and TDM for terrestrial wave, QPSK and TDM for satellite waves).
3	AGC INFO	Press the number 3 key for less than two seconds while in XM1 of the Diagnostic mode.	AGC values (two sets of four-digit decimal values) of the terrestrial wave and satellite waves.
4	RS INFO	Press the number 4 key for less than two seconds while in XM1 of the Diagnostic mode.	Number of Read-Solomon error correction bytes (four digits of hexadecimal value) + number of error frames (four digits of hexadecimal value).
5	TUNER INFO	Press the number 5 key for less than two seconds while in XM1 of the Diagnostic mode.	Information on LOCK/UNLOCK of PLL and Synchronous assembly (A/B).
6	ERROR CODE	Press the number 6 key for less than two seconds while in XM1 of the Diagnostic mode.	Error code of the defective location identifier.
7	SAT1-BER-INFO	Press the number 1 key for more than two seconds while in XM1 of the Diagnostic mode.	Bitabi signal decryption error rate (three effective digits) for satellite wave 1.
8	SAT2-BER-INFO	Press the number 2 key for more than two seconds while in XM1 of the Diagnostic mode.	Bitabi signal decryption error rate (three effective digits) for satellite wave 2.
9	TERR-BER-INFO	Press the number 3 key for more than two seconds while in XM1 of the Diagnostic mode.	Bitabi signal decryption error rate (three effective digits) for terrestrial waves.
10	MICRO Status 1	Press the number 4 key for more than two seconds while in XM1 of the Diagnostic mode.	System operation mode (two digits of hexadecimal value) + XM operation mode 1 (two digits of hexadecimal value).
11	MICRO Status 2	Press the number 5 key for more than two seconds while in XM1 of the Diagnostic mode.	XM operation mode 2 (two digits of hexadecimal value) + XM operation mode 3 (two digits of hexadecimal value).
12	ANTENNA PASS	Press the number 6 key for more than two seconds while in XM1 of the Diagnostic mode.	Bypass of the antenna connection check sequence (released by resetting the system).
13	QOC Message	Press the number 1 key for less than two seconds while in XM2 of the Diagnostic mode.	Display of the quality of service value (two digits of decimal value).
14	TERR Message	Press the number 2 key for less than two seconds while in XM2 of the Diagnostic mode.	Decryption LOCK/UNLOCK onto the terrestrial wave signal, decryption rate of the Bitabi signal (two effective digits of decimal value) + RS error correction rate (two effective digits of decimal value) + RS error rate (two effective digits of decimal value).

Number	Mode name	Entry method	Summerized Description
15	SAT1 Message	Press the number 3 key for less than two seconds while in XM2 of the Diagnostic mode.	Decryption LOCK/UNLOCK of satellite wave 1 signal, decryption rate of Bitabi signal (two effective digits of decimal value) + RS error correction rate (two effective digits of decimal value) + RS error rate (two effective digits of decimal value).
16	SAT2 Message	Press the number 4 key for less than two seconds while in XM2 of the Diagnostic mode.	Decryption LOCK/UNLOCK of satellite wave 2 signal, decryption rate of Bitabi signal (two effective digits of decimal value) + RS error correction rate (two effective digits of decimal value) + RS error rate (two effective digits of decimal value).
17	Tuner Message	Press the number 5 key for less than two seconds while in XM2 of the Diagnostic mode.	Information on LOCK/UNLOCK of PLL and connection information of terrestrial wave and satellite wave antennas.
18	Unused		
19	SSDEC Status 1	Press the number 1 key for more than two seconds while in XM2 of the Diagnostic mode.	PC reception synchronization/asynchronization + overflow count during voice service data input + underflow count during PCM output.
20	SSDEC Status 2	Press the number 2 key for more than two seconds while in XM2 of the Diagnostic mode.	General error codes for SSDEC (six effective digits of hexadecimal value).
21	SSDEC Status 3	Press the number 3 key for more than two seconds while in XM2 of the Diagnostic mode.	SSDEC service extraction error code 1 (four effective digits of hexadecimal value).
22	SSDEC Status 4	Press the number 4 key for more than two seconds while in XM2 of the Diagnostic mode.	SSDEC service extraction error code 2 (four effective digits of hexadecimal value).
23	Unused		
24	MICRO VERSION	Press the number 6 key for more than two seconds while in XM2 of the Diagnostic mode.	Major version (three digits of decimal value) + minor version (one digit decimal value).

4. Details of the Diagnostic mode

4.1 BERINFO
Display format: [(1)(2) (3) (4)(5) (6) (7)(8)].

(1) The Bitabi signal decryption error rate (effective value) for satellite wave 1*.
(2) The Bitabi signal decryption error rate (truncated binary exponential, with negative sign abbreviated) for satellite wave 1*.
(3) Spacing character.
(4) The Bitabi signal decryption error rate (effective value) for satellite wave 2*.
(5) The Bitabi signal decryption error rate (truncated binary exponential, with negative sign abbreviated) for satellite wave 2*.
(6) Spacing character.
(7) The Bitabi signal decryption error rate (effective value) for terrestrial waves*.
(8) The Bitabi signal decryption error rate (truncated binary exponential, with negative sign abbreviated) for terrestrial waves*.

* Each piece of information is effective following the initialization of CDEC. The updating interval is 432 ms. If not any of the modulated wave signals can be received (that is, the signal cannot be LOCKed), then a hyphen ("-") will be displayed.
"If notany of the modulated wave signals can be received" it represents a condition that the modulated signals could not receive the signals described in section 4.2.
Display example: If the satellite wave 1 = 10%, satellite wave 2 = 3.4% and terrestrial wave = 0.23%, the display will show [11_32_23].

4.2 LOCK-DETECT INFO
Display format: [(1)(2) (3) (4)(5) (6) (7)(8)].

(1) The modulated QPSK signal of satellite wave 1 can be received (L) / cannot be received (-).
(2) The modulated TDM signal of satellite wave 1 can be received (L) / cannot be received (-).
(3) Spacing character.
(4) The modulated QPSK signal of satellite wave 2 can be received (L) / cannot be received (-).
(5) The modulated TDM signal of satellite wave 2 can be received (L) / cannot be received (-).
(6) Spacing character.
(7) The modulated QPSK signal of terrestrial wave can be received (L) / cannot be received (-).
(8) The modulated TDM signal of terrestrial wave can be received (L) / cannot be received (-).

Each piece of information is effective following the initialization of CDEC. The updating interval is 432 ms.

Display example: If the QPSK signal of satellite wave, TDM signal of the satellite wave 2, and MCM signal of the terrestrial wave are not locked, the display will show [-L_L-_-L].

4.3 AGC INFO
Display format: [XXXXYYYY].

X: The AGC signal count value of the satellite wave (four digits of a decimal value).
Y: The AGC signal count value of the terrestrial wave (four digits of a decimal value).
Each piece of information becomes effective following the initialization of CDEC. The updating interval is 432 ms.
Display example: If the satellite wave's AGC = 123, while the terrestrial wave's AGC = 32, the display will show [01230032].

4.4 RS INFO
Display format: [XXXXYYYY].

X: Number of error correction bytes from Read Solomon decryption (four digits of hexadecimal value).
Y: Number of error frames from Read Solomon decryption (four digits of hexadecimal value).
Each piece of information becomes effective following the initialization of CDEC. The updating interval is 432 ms.

Display example: If the error correction bytes = 0 x 0040, while the error frames = 0 x 0010, the display will show [00400010].

4.5 TUNER INFO
Display format: [X_YYYYYY].

X: Synchronous ensemble (A/B).
_: Spacing character.
Y: LOCK/UNLOCK status of PLL (LOCK_/UNLOCK).
The information becomes effective following the synchronization process during the system start up.
The updating interval is 16 ms.

Display example: If the PLL is locked with ensemble A, the display will show [A_LOCK__].

4.6 ERROR CODE
Display format: [ERROR_XX].

_: Spacing character.
X: Error occurring (two digits of hexadecimal value). The upper digit is for the major (physical) error, while the lower digit is for the minor error (temporary or partial errors). Refer to the following table for details:

Code value		Description	Error location
Major	Minor		
	0	No Error	No minor error.
	1	CDEC Communication Error	The line for communicating with CDEC.
	2	SSDEC Communication Error	The line for communicating with SSDEC.
	3	SSDEC No Response	No SSDEC response (DSP core freeze).
	4	No Signal	100% error of Bitabi signal decryption.
	5	Activation Required	Not activated.
	6	Authorization Required	Not authorized.
0		No Error	No major error.
1		ANTENNA No Connect	Antenna not connected.
2		ANTENNA Short	Shorted antenna cable.
3		PLL UNLOCK	PLL cannot be synchronized (RF circuit failure).
4		Reserved	Undefined.
5		NVM Error	Defective NVM inside CAP.
6		CAP Error	Defective CAP (including situations where CAP is not connected).
7		Version Unknown	Unknown DSP core software version.

Display example: If the antenna is not connected, the display will show [ERROR_14] (no signal due to unconnected antenna).

4.7 SAT1-BER-INFO
Display format: [1_X. XXEY].

X: Bitabi signal decryption error rate (effective three digits).
Y: Truncated binary exponential (with negative sign abbreviated) of the error rate.
_: Spacing character.

The information becomes effective following the initialization of CDEC. The updating interval is 432 ms. If the wave's modulated signal cannot be received (meaning such a signal cannot be locked on), a hyphen ("-") will be displayed.

Display example: If the error rate is 0.560%, the display will show [1_5.60E3].

4.8 SAT2-BER-INFO
Display format: [2_X. XXEY].

X: Bitabi signal decryption error rate (effective three digits).
Y: Truncated binary exponential (with negative sign abbreviated) of the error rate.
_: Spacing character.

The information becomes effective following the initialization of CDEC. The updating interval is 432 ms. If none of wave's modulated signal can be received (meaning such a signal cannot be locked on), a hyphen ("-") is displayed.

Display example: If a signal cannot be locked on, the display will show [2_------].

4.9 TERR-BER-INFO
Display format: [T_X. XXEY].

X: Bitabi signal decryption error rate (effective three digits).
Y: Truncated binary exponential (with negative sign abbreviated) of the error rate.
_: Spacing character.

The information will become effective following the initialization of CDEC. The updating interval is 432 ms. If the wave's modulated signal cannot be received (meaning such a signal cannot be locked on), a hyphen ("-") will be displayed.

Display example: If the error rate is 0%, the display will show [T_0.00E0].

4.10 MICRO Status 1
Display format: [M1_XX_YY].

X: System operation mode (two effective digits of hexadecimal value).
Y: XM operation mode 1 (two effective digits of hexadecimal value).
_: Spacing character.

System operation mode table

Mode number	Mode name	Description
00	STANDBY	Standby mode.
01	PWRON	System's powering on process.
02	1STKEY	Waiting for the 1st key signal from the grille (for FM modulator types only).
05	ENABLECHK	Verifying connection (for IP-BUS types only).
10	OFF	XM OFF with ACC ON.
11	ANT_OFF	Forcing OFF due to a short-circuited antenna.
21	ANT_ON	Turning ON with a short-circuited antenna.
22	ANT_FLASH	Displaying the blinking warning indicator for the short-circuited antenna.
2F	ON	Turning XM ON.
81	MODSET	Modulator setting mode (for FM modulator types only).
82	MODESET_FREQ	Setting the frequency in the modulator setting mode.
83	MODSET_LEV	Setting the modulation level in the modulator setting mode.
84	MODOFFENT	Waiting for a mode entry in the modulator setting mode.
85	MODHOLD	Waiting for a key entry in the modulator setting mode.

XM operation mode 1 table

Mode number	Mode name	Description
00	HALT	Completed the operation to turn XM OFF.
01	ON	Turning XM to ON.
02	CHRD	Recalling the pre-set channel.
03	CHWD	Storing the pre-set channel.
04	CHUP	Dialing up the pre-set channel.
05	CHDN	Dialing down the pre-set channel.
06	PROGUP	Dialing the channel up.
07	PROGDN	Dialing the channel down.
08	PROG10UP	Dialing the channel up quickly (rough dialing).
09	PROG10DN	Dialing the channel down quickly (rough dialing).
0A	CATUP	Searching category upwards.
0B	CATDN	Searching category downwards.
0C	CATSUP	Searching inside a category upwards.
0D	CATSDN	Searching inside a category downwards.
0E	TRIGON	No longer receiving the SID signal .
10	RX	Receiving.
12	CHUP_WAIT	Waiting for the pre-set channel dial up key to be released.
13	CHDN_WAIT	Waiting for the pre-set channel dial down key to be released.
14	CHUP_REL	Releasing the pre-set channel dial up key .

Mode number	Mode name	Description
15	CHDN_REL	Releasing the pre-set channel dial down key.
16	PROG10UP_WAIT	Waiting for the rough channel dial up key to be released.
17	PROG10DN_WAIT	Waiting for the rough channel dial down key to be released.
18	PROG10UP_REL	Releasing the rough channel dial up key.
19	PROG10DN_REL	Releasing the rough channel dial down key.
1A	CATUP_WAIT	Waiting for the category dial up key to be released.
1B	CATDN_WAIT	Waiting for the category dial down key to be released.
1C	CATUP_REL	Releasing the category dial up key.
1D	CATDN_REL	Releasing the category dial down key.

Display example: If the system is receiving signals, the display will show [M1_1F_10].

4.11 MICRO Status2

Display format: [M2_XX_YY].

X: XM operation mode 2 (two effective digits of hexadecimal value).
Y: XM operation mode 3 (two effective digits of hexadecimal value).
_: Spacing character.

XM operation mode 2 table

Mode number	Mode name	Description
00	STOP	Completed the API control process.
01	START	Starting the API control process.
02	GETSID	Acquired SID .
04	GETPROGNAME	Switching programs.
05	OFF	Turning the operation OFF.
06	SETUP	Starting the application.
07	NEXTPROG	Switching to the next program.
08	SELPROG	Selecting a program.
0A	NEXTCAT	Acquiring the next category.
0D	NOSID	SID not available.
0E	GETID	Acquiring the HWID code.
30	NEXTPROG1	Performing the first half of transfer process to the next channel.
31	NEXTPROG2	Performing the second half of transfer process to the next channel.
32	SELPROG1	Selecting a program from NEXTPROG1.
33	SELPROG2	Selecting a program from NEXTPROG2.

XM operation mode 2 table

Mode number	Mode name	Description
00	STOP	Turning off XM circuit completed.
01	PWROFFW	Turning the XM circuit off.
02	STBYWT	Resetting SSDEC.
03	PWRON	Starting the XM circuit.
04	PWRONWT	Waiting for the XM circuit power ON to stabilize.
05	STBY	Starting SSDEC reset.
06	PREMUTE	Starting pre-mute DAC.
07	PREMUTEWT	Waiting for pre-mute DAC.
08	DWLDWT	Downloading the DSP patch code.
09	DWLD	Starting to download the DSP patch code.
0A	INIT	Starting the initialization of SSDEC.
0B	INIT2	Initializing SSDEC (Step 2).
0C	INIT3	Initializing SSDEC (Step 3).
0D	INIT4	Initializing SSDEC (Step 4).
0E	INIT5	Initializing SSDEC (Step 5).
0F	INIT6	Initializing SSDEC (Step 6).
10	INIT7	Initializing SSDEC (Step 7).

Mode number	Mode name	Description
11	INIT8	Initializing SSDEC (Step 8).
12	INIT9	Initializing SSDEC (Step 9).
13	INIT10	Initializing SSDEC (Step 10 - Power Up command issued).
14	SLEEPWT	Waiting for a response to the Power Off command.
15	SLEEP	Issuing the Power Off command.
16	INIT10WT	Initializing SSDEC (waiting for a response to the Power Up command).
18	INIT11	Initializing SSDEC (Step 11 - issuing Force Update command).
19	INIT11WT	Waiting for a response to the Force Update command.
1F	HOLD	Waiting for other controls to complete their processes.
20	IDEL	Completing control processes.
21	READY1	Controlling pre-start readiness 1.
22	READY2	Controlling pre-start readiness 2.
25	PURGECOM	Controlling pre-start readiness 3 (waiting for the completion of processes by unnecessary commands).
26	PURGECOM1	Waiting for completion of unnecessary OFF command processes.
27	RX_PREMUTE	Starting pre-mute DAC outside the start up operations.
28	RX_PREMUTE_WT	Waiting for the completion of the pre-mute DAC outside the start up operations.
29	RX_AFTMUTE	Starting the after-mute DAC outside the start up operations.
2A	RX_AFTMUTE_WT	Waiting for the completion of the after-mute DAC outside the start up operations.
2C	SETENS	Switching the ensemble of the PLL.
2D	SETENSWT	Waiting for the switching of the ensemble of the PLL.
2E	SETPCID	Switching PCID of CDEC.
2F	SETENSWT2	Checking LDET, following the switching of the ensemble of the PLL.
30	CHECK_RQ	Outputting the Service/Channel Check, Channel UpDown or Program UpDown command.
31	CHECK_RQ1	Issuing the Channel Check command to a channel with Channel UpDown or Program UpDown results.
32	CHECK_WT	Waiting for the response to the command output by CHECK_RQ.
33	CHECK_WT1	Waiting for the response to the command output by CHECK_RQ1.
34	SERVICE_EXT_RQ	Issuing the Service Extract command.
35	SERVICE_EXT_WT	Waiting for the response to the Service Extract command.
37	NXTCATNO	Acquiring the next category number.
38	GETBIC	Acquiring the various labels.
39	GETBICWT	Waiting for the acquisition of the various labels.
3A	EXT_CHK	Starting to check the Extract status.
3B	EXTERR_WT	Checking the Extract status.
3C	BICADF_CHG_CHK	Checking the changes to the various program information.
3D	ANT_CHK	Checking the antenna connection status.
3E	ACTIVATE_CHK	Checking the Activation status.
3F	UPDATE_CATLIST	Starting to update the category list.
40	UPDATE_CATLISTWT	Updating the category list.
E0	HWERROR	Interrupting the start up operation due to a CAP error.
E1	VERERROR	Interrupting the start up operation due to unknown version of the DSP core software.
E2	ANTSHORT	Antenna short-circuited.
E3	ANTOPEN	Antenna is not connected.
E4	NOSIGNAL	All Bitabi signal decryption error rates are 100%.
E5	RF_UNLOCK	Cannot lock on to the PLL signal.
E6	SERV_UNAVAIL	Cannot locate the specified program.
E7	TYPE_UNAVAIL	Cannot locate a program with the specified service type.
E8	PROG_UNAVAIL	Cannot locate a program with the specified category.
E9	UNKNOWN_PC	The PC signal is not of a standard format.
EA	ACT_REQ	Received an Activation request.
EB	AUTH_REQ	Received an Authorization request.
EC	OFFAIR	Service is off the air.

Mode number	Mode name	Description
ED	DIFF_ENS	Specified Primary and Secondary PCID do not exist in an identical ensemble.
EE	PC_UNDETECT	The PC signal of the specified program cannot be received.
EF	SID_UNDETECT	SID of the specified program cannot be verified.
F0	SCT_UNDETECT	The service component type of the specified program cannot be verified.
F1	AUTH_MISS	Updating the encryption key.
F3	RAT_BLOCK	Have not signed up for the charge service contract.
F4	RAT_LOW	A program has been selected that is outside the range of the charge contract.
F5	TOD_ROLLBACK	The time information, managed inside the DSP core and the time information aired, do not match.
FF	REQ_RETRY	Failure occurred with the SSDEC (a restart is requested).

Display example: If the system is receiving, the display will momentarily show [M2_00_20].

4.12 ANTENNA PASS

No display.

If an antenna is not connected, and if this setting is made while the system is displaying the "ANTENNA" message, connection checks will not be conducted until the system has been reset (the system will assume normal operation without an antenna check).

4.13 QOS Message

Display format: [1AABBCCD].

A: The Bitabi error rate (two effective digits of decimal value) of terrestrial wave*1.
B: The Bitabi error rate (two effective digits of decimal value) of satellite wave 1*1.
C: The Bitabi error rate (two effective digits of decimal value) of terrestrial wave 2*1.
D: The quality of service (QOS) value (a single effective digit decimal value)*2.

*1: The two-digit display may show from 0 to 99. If the display information is being acquired, the display will show "-". For 100, the display will show "XX". If a signal is not received, the display will show "NS."
*2: The single digit display may show from 0 to 9. If the display information is being acquired, the display will show "-". For 10 and over, the display will show "X".

4.14 TERR Message

Display format: [2ABBCCDD]

A: The locking status of the terrestrial wave*1.
B: The terrestrial wave Bitabi signal error rate (two effective digits of decimal value)*2.
C: The terrestrial wave Read-Solomon symbol error rate (two-effective digits of decimal value)*3.
D: The terrestrial wave Read-Solomon non-correction code word (two effective digits of decimal value)*4.
*1: The "-" will be displayed while the system is acquiring the information, "N" if the signal is not locked on, "D" if only the demodulator is locked, and "T" if both the TDM and demodulator are locked on.
*2: The two-digit display may show from 0 to 99. If the display information is being acquired, the display will show "-". For 100, the display will show "XX". If a signal is not received, the display will show "NS."
*3: The two-digit display may show from 0 to 99. If the display information is being acquired, the display will show "-". For 100, the display will show "XX".
*4: The two-digit display may show from 0 to 99. If the display information is being acquired, the display will show "-". For 100, the display will show "XX".

4.15 STA1 Message
Display format: [3ABBCCDD].

A: The locking status of the satellite wave 1*1.
B: The satellite wave 1 Bitabi signal error rate (two effective digits of decimal value)*2.
C: The satellite wave 1 Read-Solomon symbol error rate (two-effective digits of decimal value)*3.
D: The satellite wave 1 Read-Solomon non-correction code word (two effective digits of decimal value)*4.
*1: The "-" will be displayed while the system is acquiring the information, "N" if the signal is not locked on, "D" if only the demodulator is locked, and "T" if both the TDM and demodulator are locked on.
*2: The two-digit display may show from 0 to 99. If the display information is being acquired, the display will show "-". For 100, the display will show "XX". If no signal is received, the display will show "NS."
*3: The two-digit display may show from 0 to 99. If the display information is being acquired, the display will show "-". For 100, the display will show "XX".
*4: The two-digit display may show from 0 to 99. If the display information is being acquired, the display will show "-". For 100, the display will show "XX".

4.16 SAT2 Message
Display format: [4ABBCCDD].

A: The locking status of the satellite wave 2*1.
B: The satellite wave 2 Bitabi signal error rate (two effective digits of decimal value)*2.
C: The satellite wave 2 Read-Solomon symbol error rate (two-effective digits of decimal value)*3.
D: The satellite wave 2 Read-Solomon non-correction code word (two effective digits of decimal value)*4.
*1: The "-" will be displayed while the system is acquiring the information, "N" if the signal is not locked on, "D" if only the demodulator is locked, and "T" if both the TDM and demodulator are locked on.
*2: The two-digit display may show from 0 to 99. If the display information is being acquired, the display will show "-". For 100, the display will show "XX". If no signal is received, the display will show "NS."
*3: The two-digit display may show from 0 to 99. If the display information is being acquired, the display will show "-". For 100, the display will show "XX".
*4: The two-digit display may show from 0 to 99. If the display information is being acquired, the display will show "-". For 100, the display will show "XX".

4.17 Tuner Message
Display format: [5AB____].

A: The locking status of the PLL signal (L= locked, U = unlocked).
B: Antenna connection status (D= normal, U = connection failure).

4.18 SSDEC Status1
Display format: [6AAABBCC].

A: The synchronization status of the PC signal (S10 = synchronized, U01 = asynchornous).
B: Overflow count during voice service data input (two effective digits of hexadecimal value).
C: Underflow count during the PCM output (two effective digits of hexadecimal value).

4.19 SSDEC Status2
Display format: [7_AAAAAA].

A: General error information of SSDEC (six effective digits of hexadecimal value).

4.20 SSDEC Status3
Display format: [8___AAAA].

A: The Extract error information 1 of the SSDEC (four effective digits of hexadecimal value).

4.21 SSDEC Status4
Display format: [9____AAAA].

A: The Extract error information 2 of the SSDEC (four effective digits of hexadecimal value).

4.22 MICRO VERSION
Display format: [VERAAA. B].

A: Major version (three effective digits of decimal value).
B: Minor version (a single effective digit of decimal value).

Display example: If the Micro version is 4.7, the display will show [VER004.7].

7. GENERAL INFORMATION

7.1 DIAGNOSIS

7.1.1 DISASSEMBLY

● **Removing the Case (Fig.1)**

1 Remove the five screws and then remove the Case.

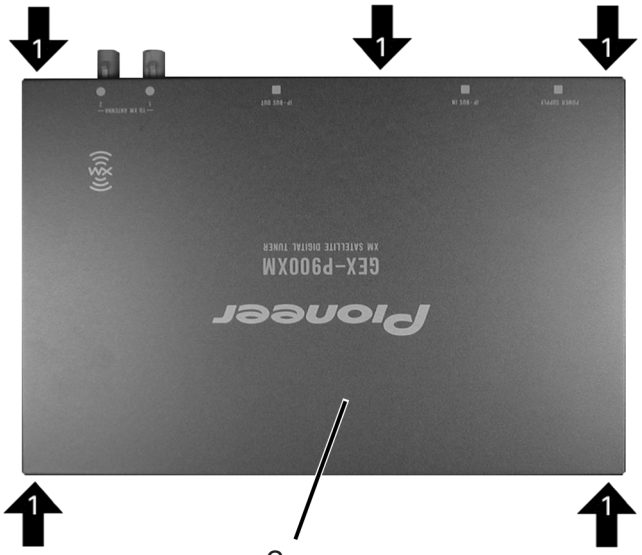


Fig.1

● **Removing the Main Unit (Fig.2)**

1 Straight the tabs at four locations indicated.

2 Remove the screw.

3 Remove the screw and then remove the Main Unit.

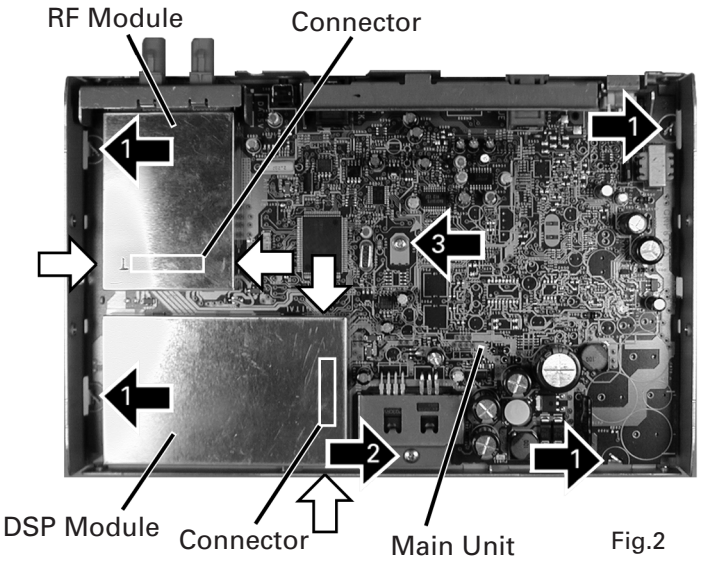


Fig.2

● **Removing the RF Module (Fig.3)**

1 Straight the tabs at two locations indicated and then remove the Holder.

2 Remove the solder and then straight the tabs at four locations indicated.

Remove the RF Module from the Main Unit.

Note)Hold the RF Module at the connector side marked with white arrows in the Fig.2.

● **Removing the DSP Module (Fig.3)**

3 Remove the solder and then straight the tabs at four locations indicated.

Remove the DSP Module from the Main Unit.

Note)Hold the DSP Module at the connector side marked with white arrows in the Fig.2.

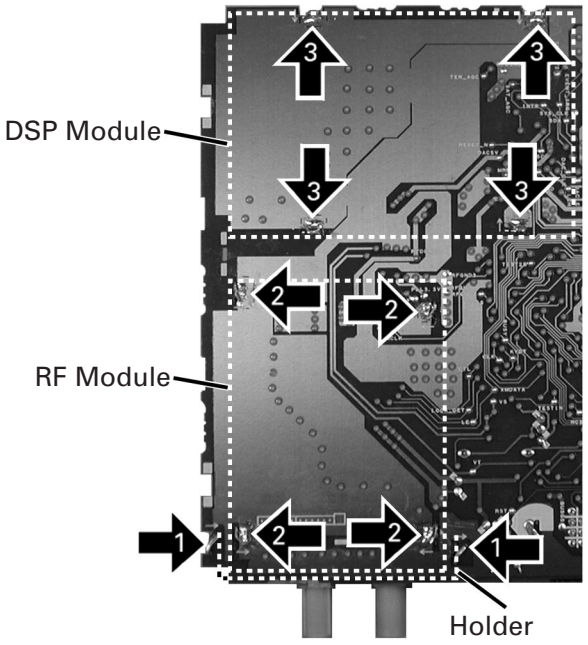
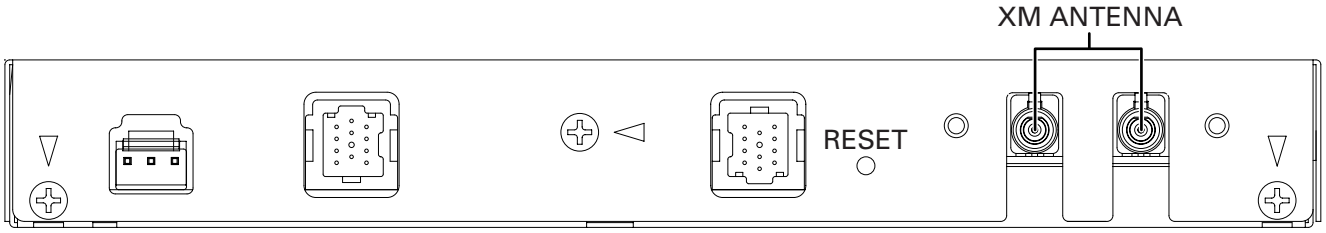
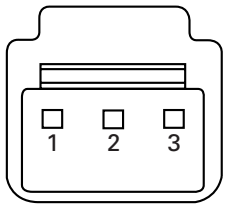


Fig.3

7.1.2 CONNECTOR FUNCTION DESCRIPTION

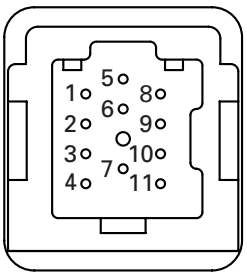


POWER SUPPLY



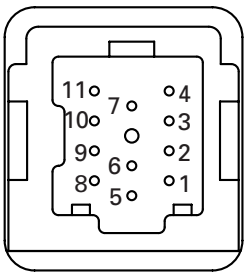
1.GND
2.ACC
3.BATT.

IP-BUS IN



1.BUS+	7.BUSL1
2.BUSG1	8.ASENB
3.BUSG1	9.BUSR1
4.NC	10.BUSR2
5.BUS-	11.BUSL2
6.BUSG1	

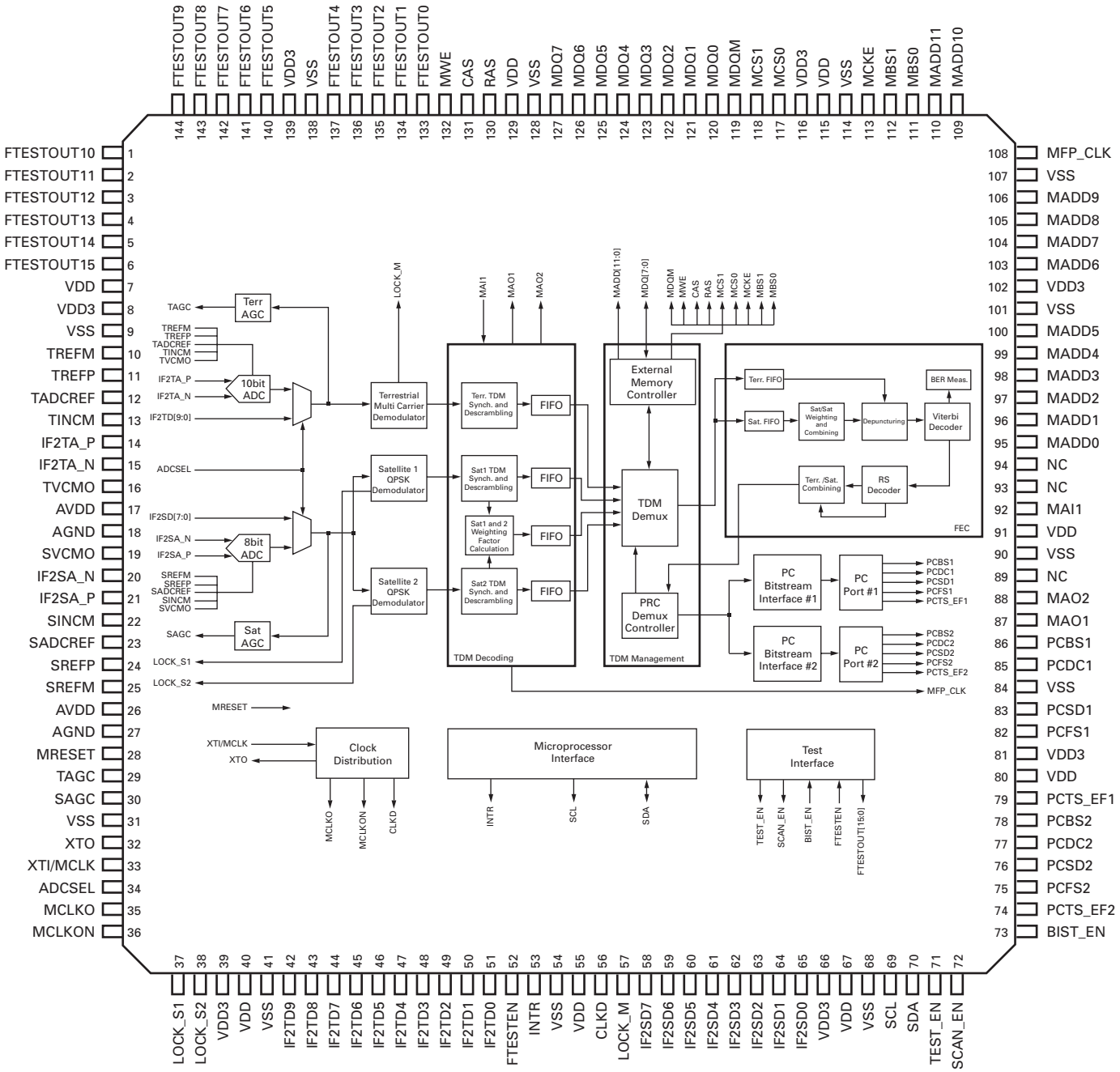
IP-BUS OUT



1.BUS+	7.BUSL3
2.BUSG5	8.ASENB
3.BUSG5	9.BUSR3
4.NC	10.BUSAG1
5.BUS-	11.BUSAG1
6.BUSG5	

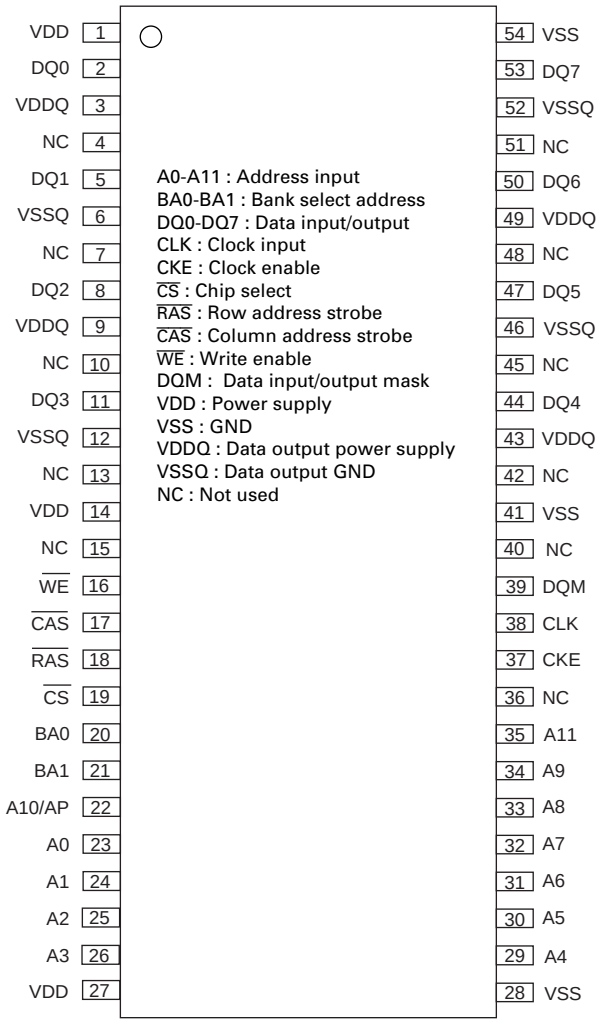
7.2 IC

*STA-400

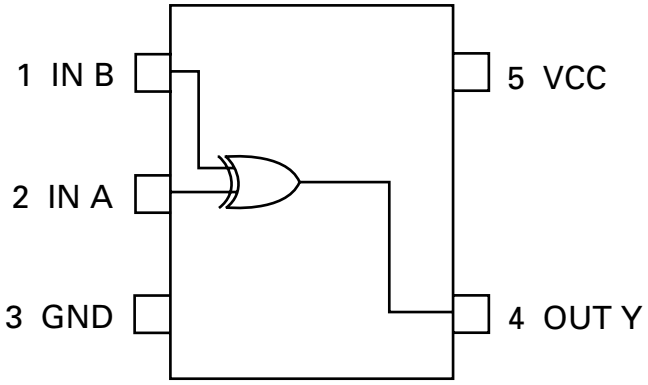


IC's marked by * are MOS type.
Be careful in handling them because they are very liable to be damaged by electrostatic induction.

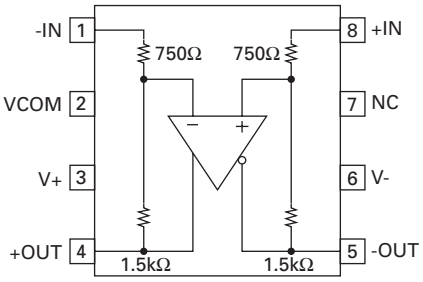
*K4S640832E-TL1H



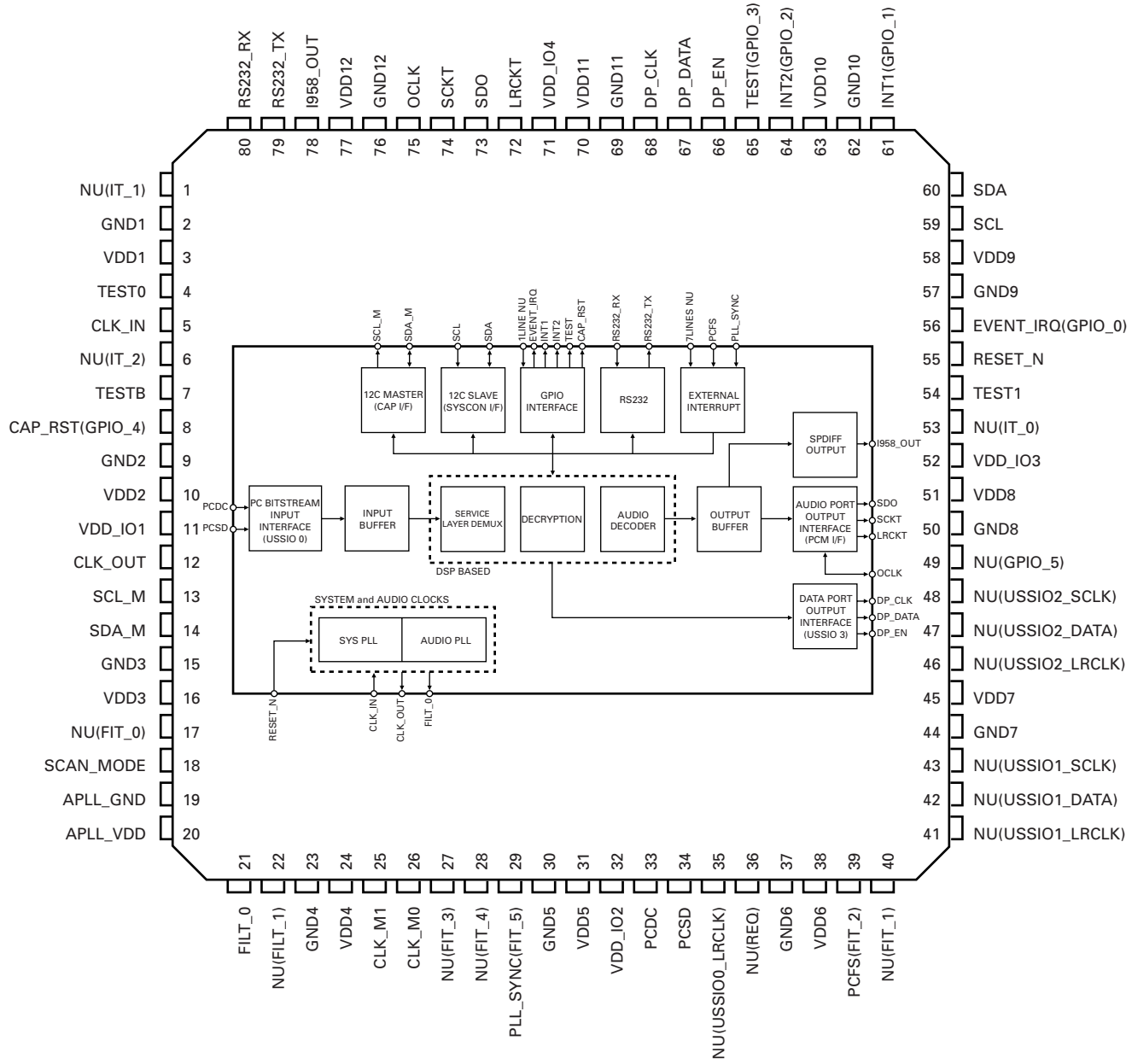
*TC7SH86FU



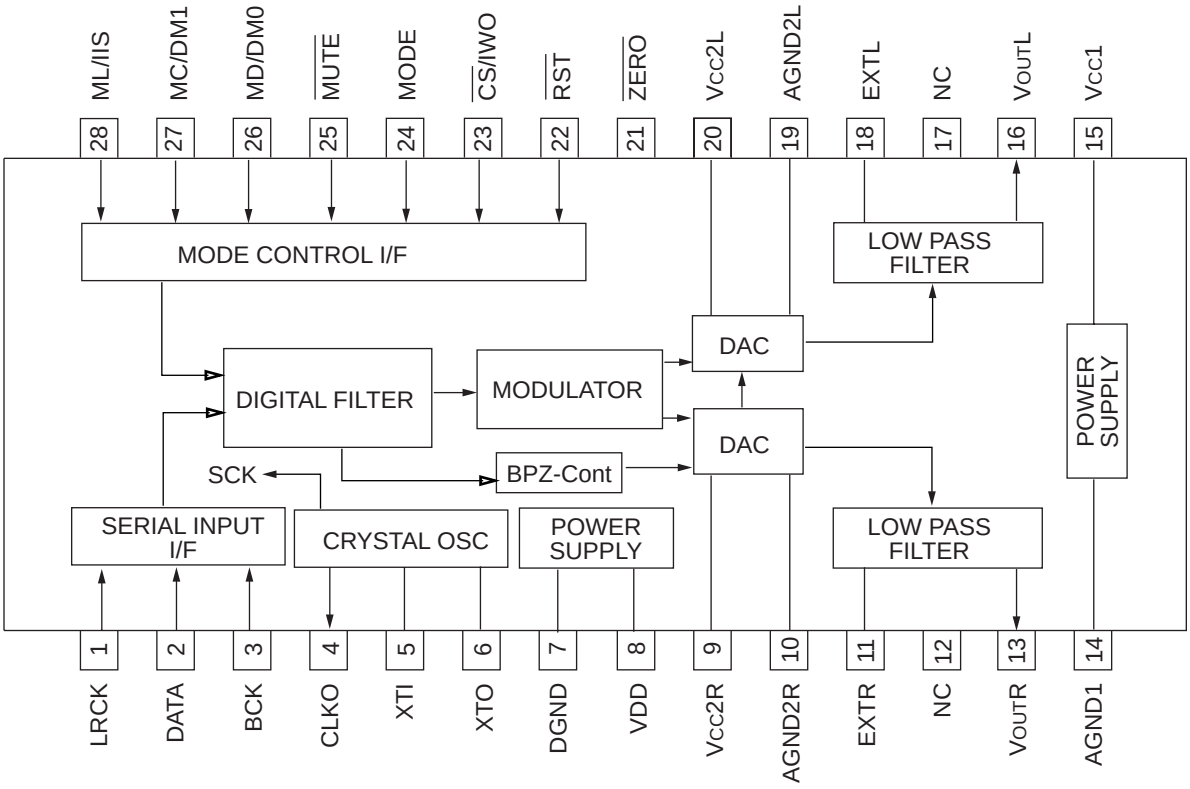
AD8131ARM



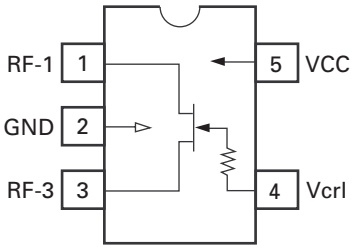
*STA-450


RS232_RX 80
RS232_TX 79
I958_OUT 78
VDD12 77
GND12 76
OCLK 75
SCKT 74
SDO 73
LRCKT 72
VDD_IO4 71
VDD11 70
GND11 69
DP_CLK 68
DP_DATA 67
DP_EN 66
TEST(GPIO_3) 65
INT2(GPIO_2) 64
VDD10 63
GND10 62
INT1(GPIO_1) 61
NU(IT_1) 1
GND1 2
VDD1 3
TEST0 4
CLK_IN 5
NU(IT_2) 6
TESTB 7
CAP_RST(GPIO_4) 8
GND2 9
VDD2 10
VDD_IO1 11
CLK_OUT 12
SCL_M 13
SDA_M 14
GND3 15
VDD3 16
NU(FIT_0) 17
SCAN_MODE 18
APLL_GND 19
APLL_VDD 20
60 SDA
59 SCL
58 VDD9
57 GND9
56 EVENT_IRQ(GPIO_0)
55 RESET_N
54 TEST1
53 NU(IT_0)
52 VDD_IO3
51 VDD8
50 GND8
49 NU(GPIO_5)
48 NU(USSIO2_SCLK)
47 NU(USSIO2_DATA)
46 NU(USSIO2_LRCLK)
45 VDD7
44 GND7
43 NU(USSIO1_SCLK)
42 NU(USSIO1_DATA)
41 NU(USSIO1_LRCLK)
21 FILT_0
22 NU(FILT_1)
23 GND4
24 VDD4
25 CLK_M1
26 CLK_M0
27 NU(FIT_3)
28 NU(FIT_4)
29 PLL_SYNC(FIT_5)
30 GND5
31 VDD5
32 VDD_IO2
33 PCDC
34 PCSD
35 NU(USSIO0_LRCLK)
36 NU(REQ)
37 GND6
38 VDD6
39 PCFS(FIT_2)
40 NU(FIT_1)
SCL_M
SDA_M
SCL
SDA
TUNE NU
EVENT_IRQ
INT1
INT2
TEST
CAP_RST
RS232_RX
RS232_TX
TUNES NU
PCFS
PLL_SYNC
12C MASTER (CAP I/F)
12C SLAVE (SYSCON I/F)
GPIO INTERFACE
RS232
EXTERNAL INTERRUPT
SPDIFF OUTPUT
I958_OUT
PCDC
PCSD
PC BITSTREAM INPUT INTERFACE (USSIO 0)
INPUT BUFFER
SERVICE LAYER DEMUX
DECRYPTION
AUDIO DECODER
OUTPUT BUFFER
AUDIO PORT OUTPUT INTERFACE (PCM I/F)
SDO
SCKT
LRCKT
OCLK
DSP BASED
SYSTEM and AUDIO CLOCKS
SYS PLL
AUDIO PLL
DATA PORT OUTPUT INTERFACE (USSIO 3)
DP_CLK
DP_DATA
DP_EN
RESET_N
CLK_IN
CLK_OUT
FILT_0

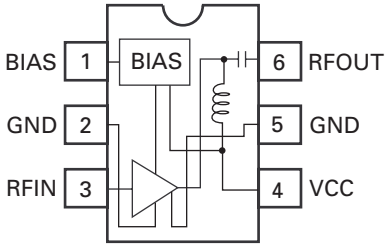
*PCM1716E-3



AT-119



MAX2644EXT



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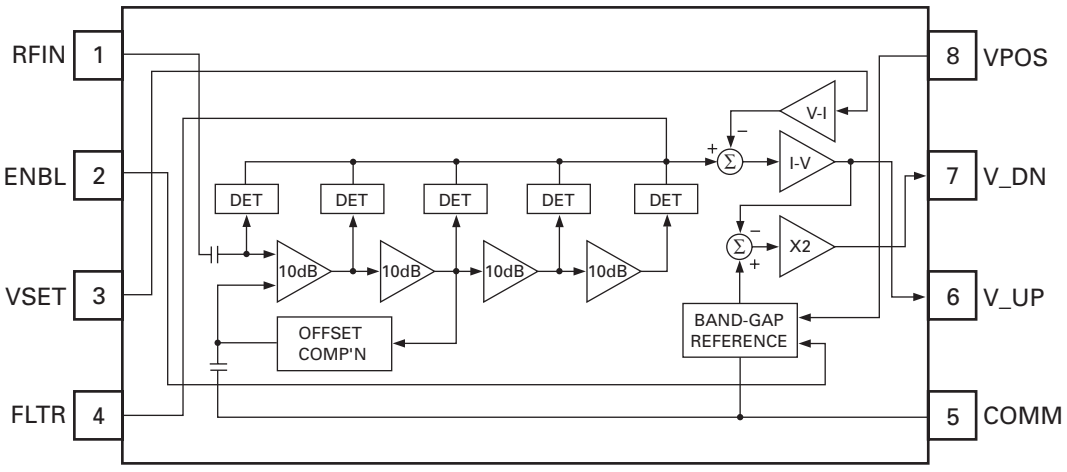
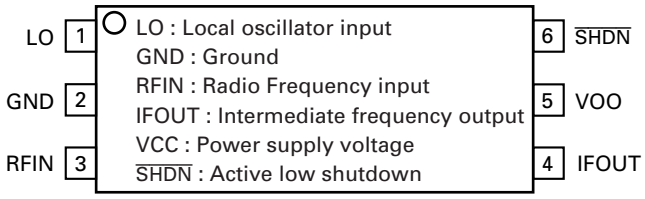
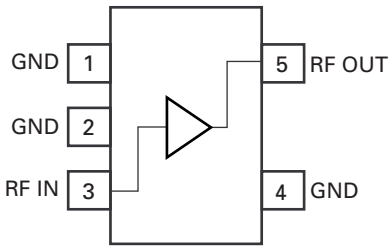


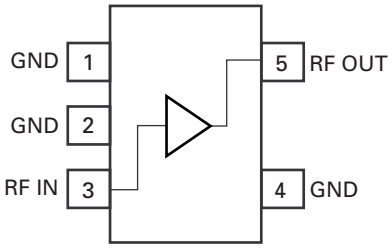
*MAX2682EUT



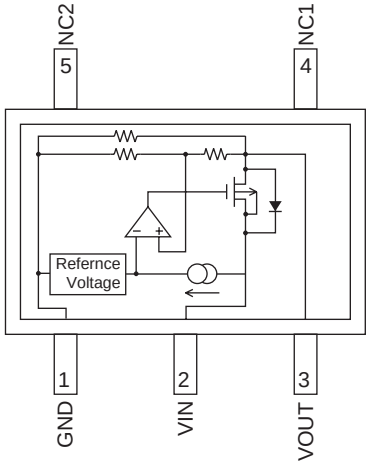
RF2326



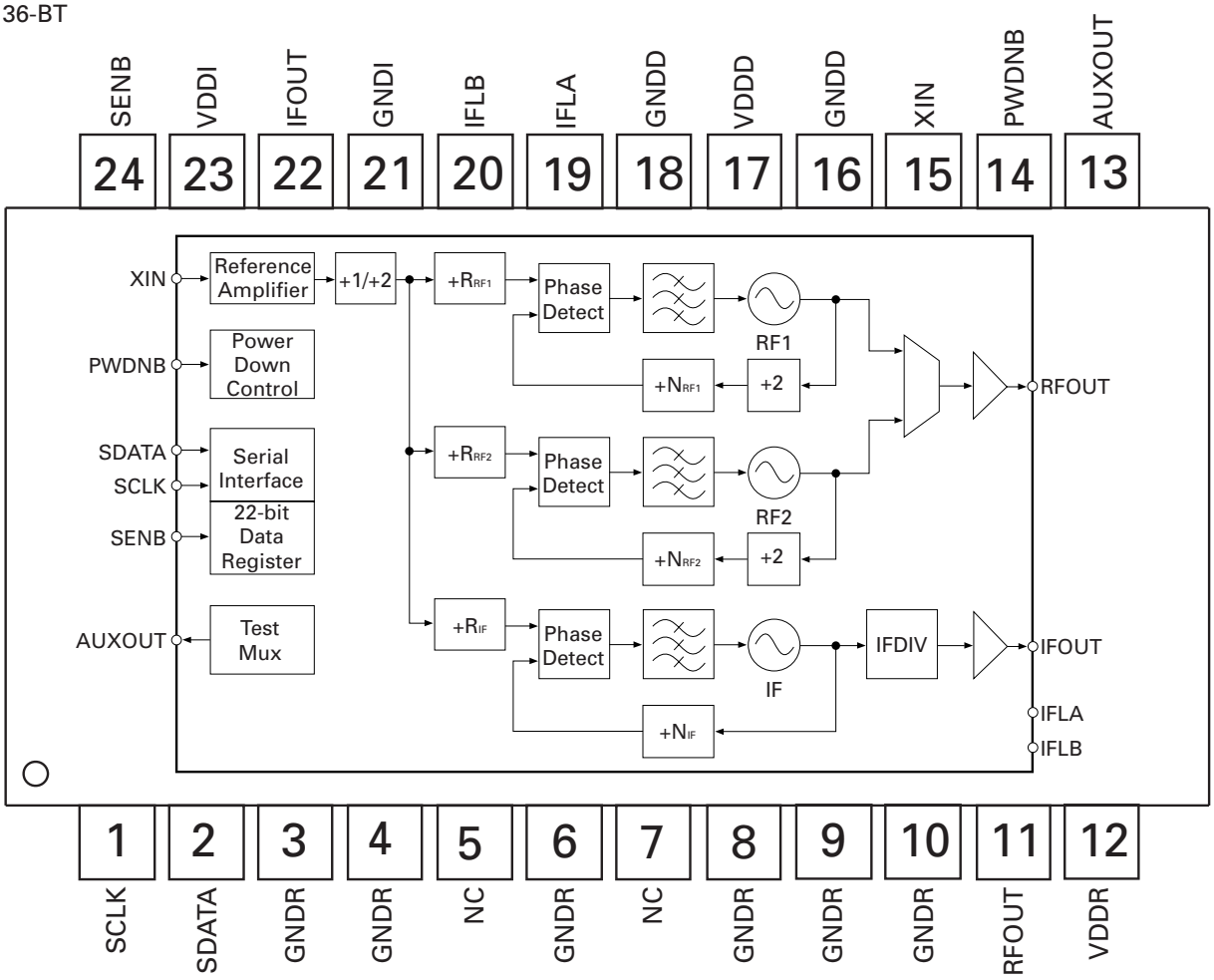
RF2325



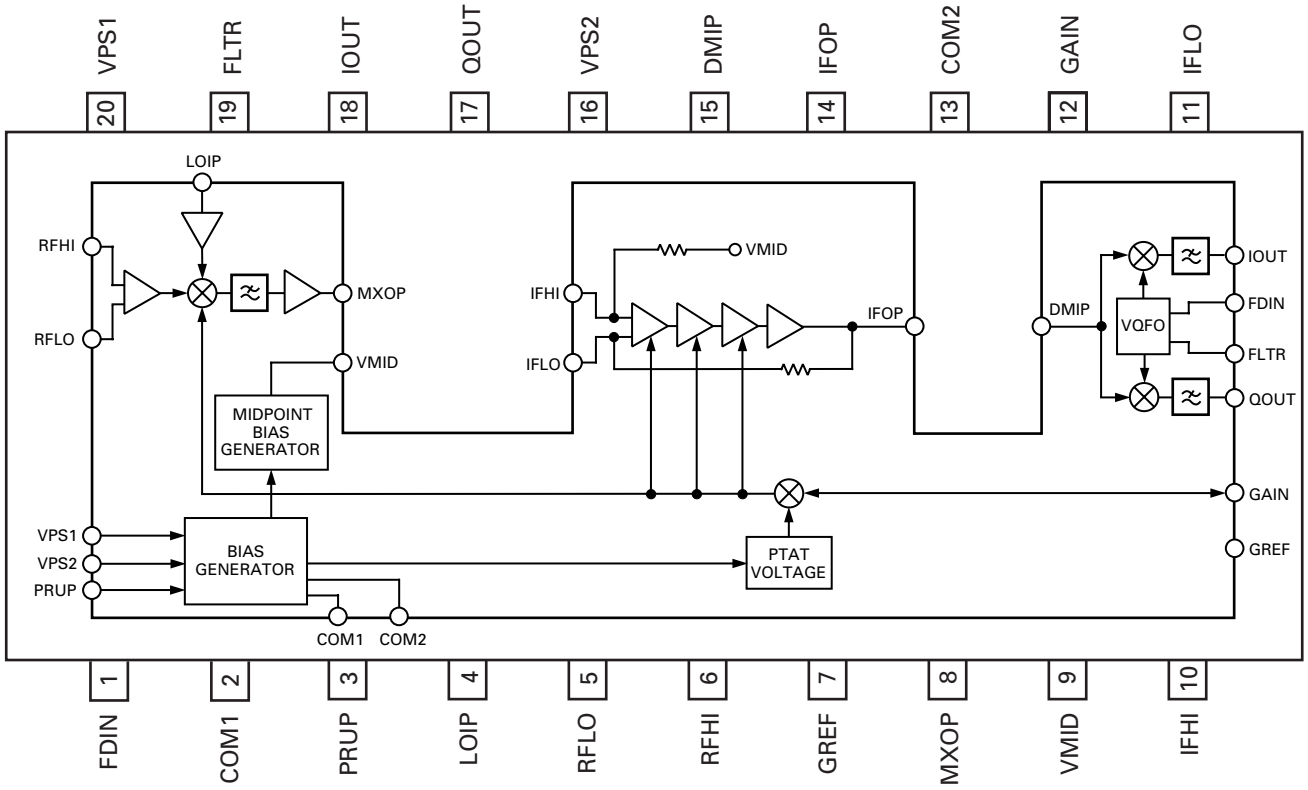
*S-81225SG-QH



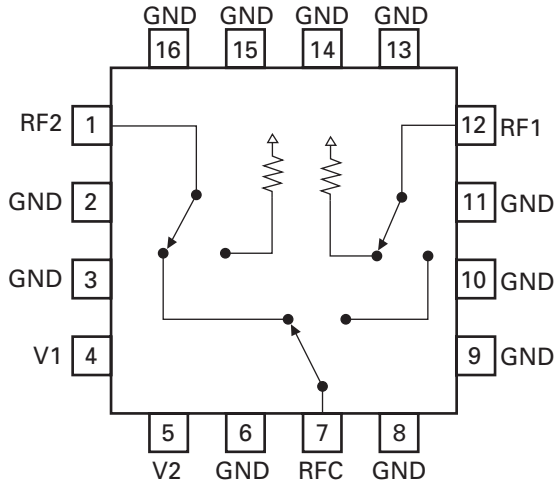
*SI4136-BT



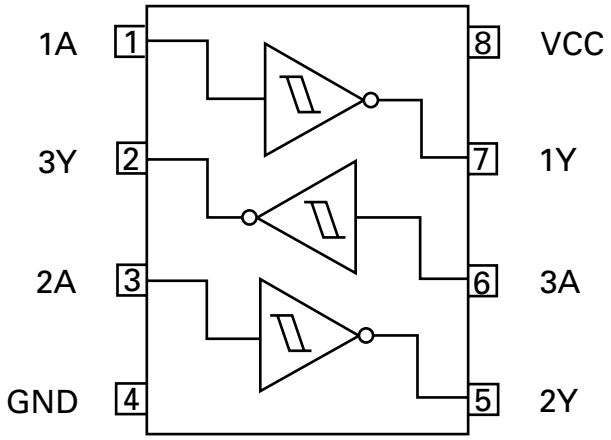
*AD61009ARS



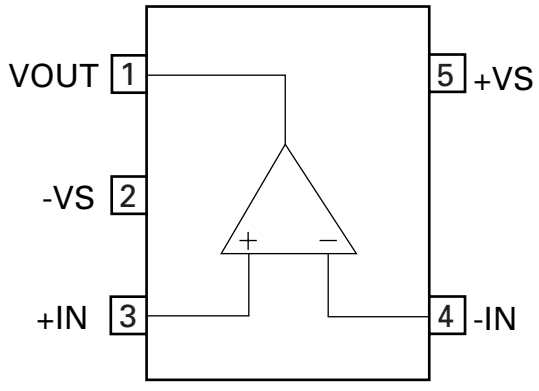
SW-475



*TC7W14FK



AD8061ART

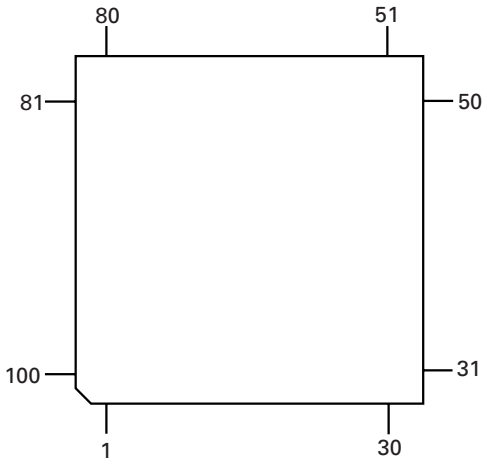


● **Pin Functions (PD5680A)**

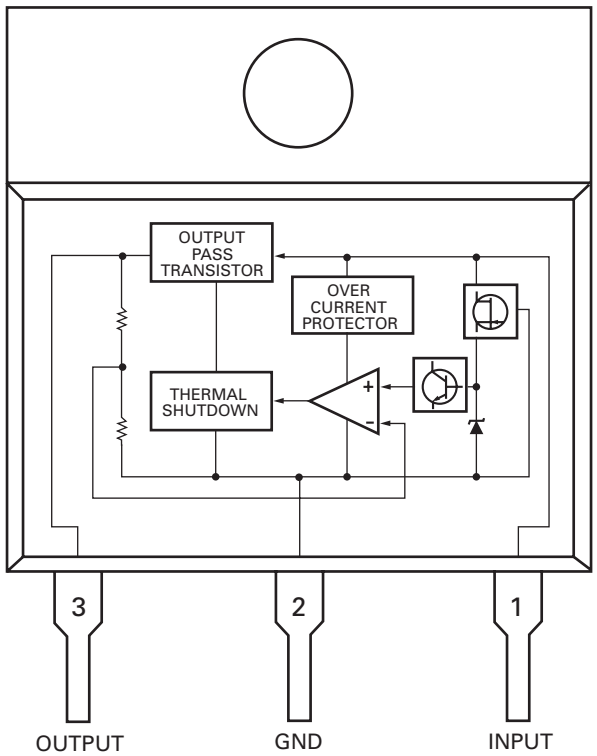
Pin No.	Pin Name	I/O	Function and Operation
1	XMDATA	O	RF Unit communication data output
2	XMCLK	O	RF Unit communication clock output
3,4	NC		Not used
5	SDA	O	Digital Unit communication data output
6	SDAIN	I	Digital Unit communication data input
7	SCL	O	Digital Unit communication clock output
8	BYTE	I	External bus width select input
9	CNVSS	I	Processor mode select input
10,11	NC		Not used
12	RESET	I	Reset input
13	XOUT		Clock output
14	VSS		GND
15	XIN		Clock input
16	VCC		Power supply
17	NMI	I	NMI input
18	NC		Not used
19	EVENT_IRQ	I	SSDEC communication interrupt input
20	NC		Not used
21	IPTA4IN	I	IP-BUS connect input
22	IPPW	O	IP-BUS driver power supply control output
23	NC		Not used
24	DISPPW	O	Display Unit power supply control output
25	FMMODPW	O	FM modulator power supply output
26	MODPCE	O	PLL IC enable output
27	MODPDO	O	PLL IC communication data output
28	MODPCK	O	PLL IC communication data clock output
29	IPIN	I	IP-BUS data input
30	IPOUT	O	IP-BUS data output
31	DPDT	O	Display data output
32	KYDT	I	Key data input
33	CLK	I	Flash memory rewrite clock input
34	BUSY	O	Flash memory rewrite select output
35	DACDATA	O	DAC IC communication data output
36	TSI		Not used
37	DACCLK	O	DAC IC communication clock output
38	G		Not used
39	DIR		Not used
40	ACCPW	O	Power supply control output
41	EPM	I	Flash memory rewrite select input
42	FMIPSW	I	FM/IP-BUS select sense input
43	TESTIN	I	Test program sense input
44	MUTE	O	Mute output
45	SEL	O	Source select output
46	CE	I	Flash memory rewrite input
47-50	NC		Not used
51	SYSPW	O	Audio power supply control output
52-54	NC		Not used
55	LOCK_DET	I	RF Unit lock signal input
56	NC		Not used
57	CTL	O	Antenna control output
58	LE	O	RF Unit chip select output
59	DAC_EN	O	DAC IC chip select output
60	NC		Not used
61	MRESET	O	CDEC IC reset output
62	VCC		Power supply
63	NC		Not used
64	VSS		GND

Pin No.	Pin Name	I/O	Function and Operation
65,66	NC		Not used
67	RESETN	O	SDEC reset output
68-71	NC		Not used
72	TEST2	I	IP-FLASH urgent write control input
73	ASENSFM	I	ACC sense input (FM modulator)
74	ASENS	I	ACC sense input
75	BSENS	I	Back up sense input
76,77	NC		Not used
78	ROMDATA	O	External ROM data output
79	ROMCLK	O	External ROM clock output
80	ROMCS	O	External ROM chip select output
81-83	NC		Not used
84	XMPW	O	Power supply control output (XM TUNER Source ON)
85	RFPW	O	RF Circuit power supply control output
86-90	NC		Not used
91	SAT_ANT	I	Satellite antenna detect input
92	TER_ANT	I	TERRESTRIAL antenna detect input
93-95	NC		Not used
96	AVSS		Analog GND
97	NC		Not used
98	VREF		A/D converter power supply
99	AVCC		Analog power supply
100	XMDATAIN	I	RF Unit data input

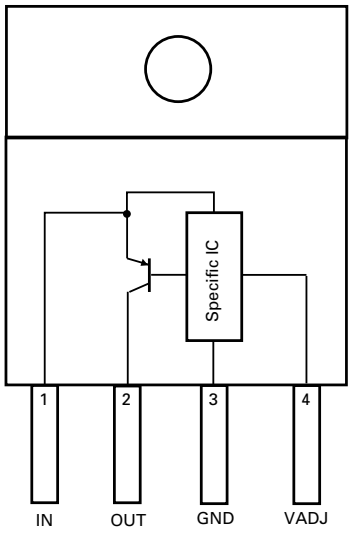
*PD5680A



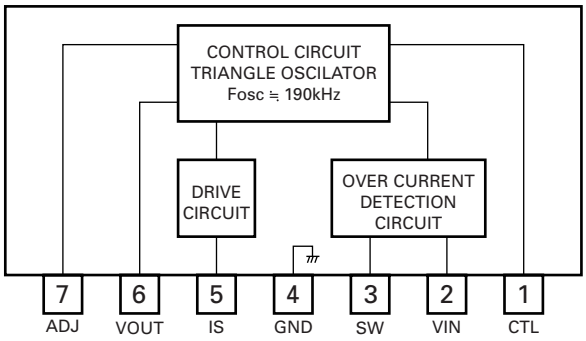
UPC7805AHF



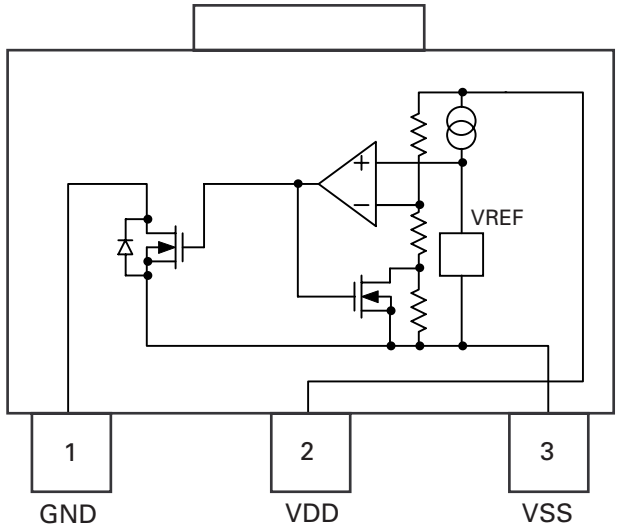
PQ30RV1



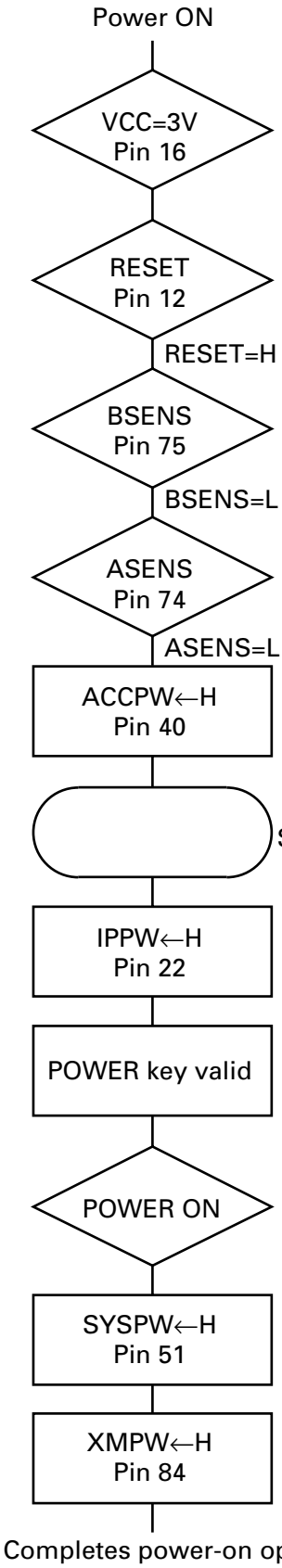
BP5250

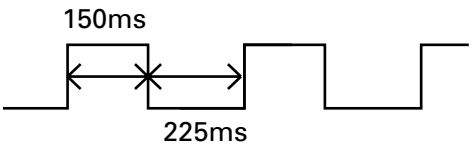


*S-80827ANUP-EDQ



7.3 OPERATIONAL FLOW CHART





In case of the above signal, the communication with IP-BUS may fail.

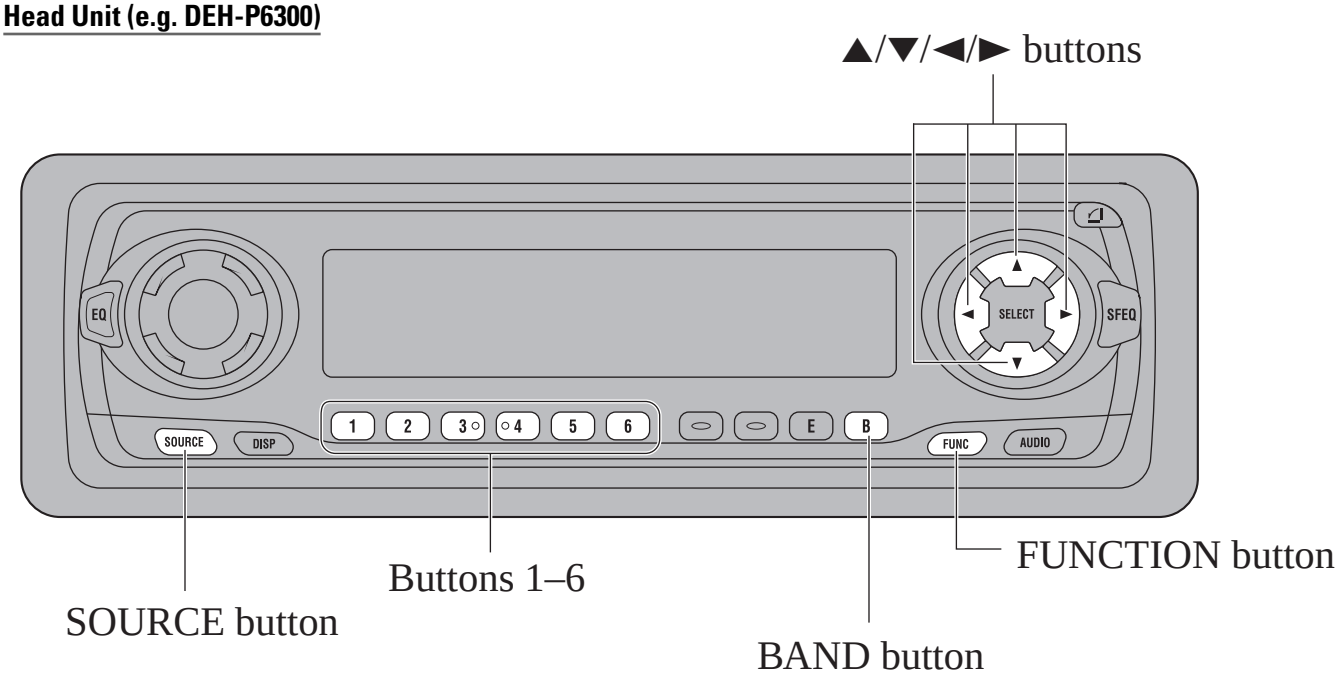
8. OPERATIONS AND SPECIFICATIONS

8.1 OPERATIONS

Basic Operation

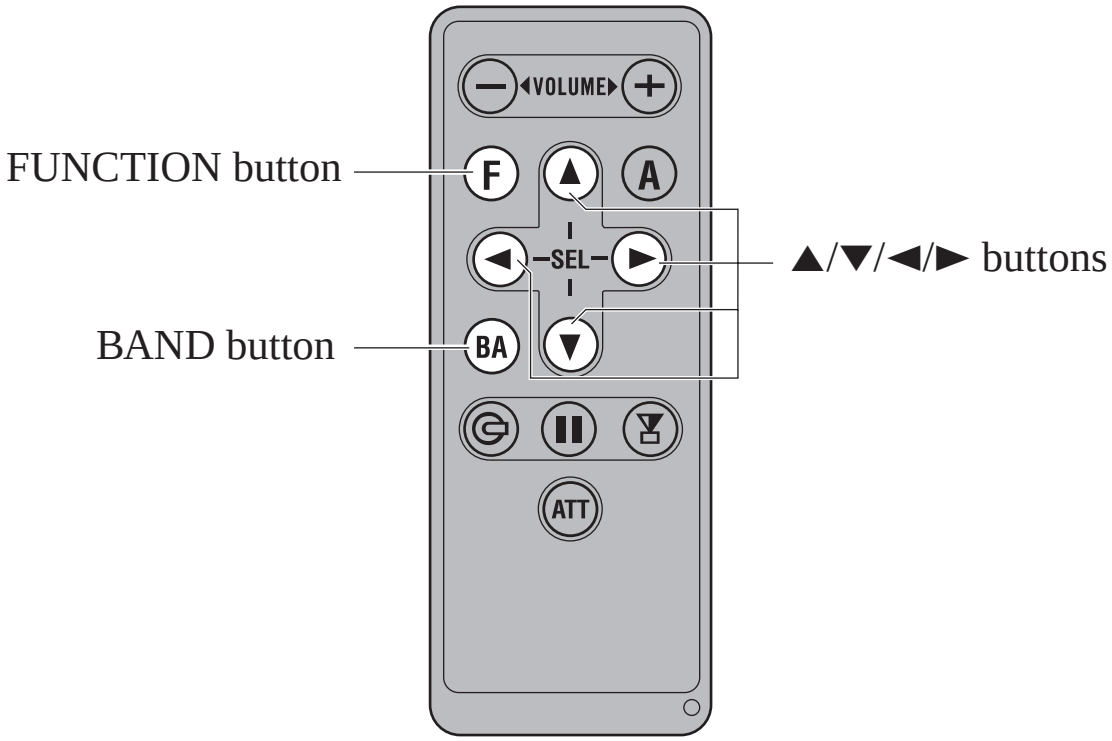
Key Finder

Head Unit (e.g. DEH-P6300)



Remote Controller (e.g. DEH-P6300)

You can operate in the same way with the Remote Controller supplied with the Head Unit. For details, refer to the Head Unit's Operation Manual.



Switching Power ON/OFF

Each press of the SOURCE button selects XM as follows.

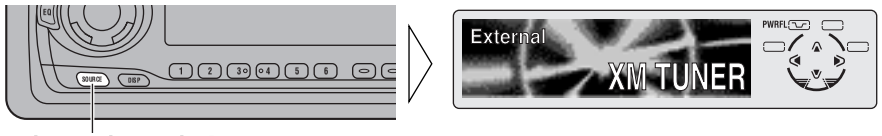
Built-in CD Player → TV → Tuner → DAB → Multi-CD Player → XM tuner (External Unit 1) → External Unit 2 → AUX → ...

- **To switch the sources OFF, hold down the SOURCE button for 1 second.**

Note:
- When two external units are connected, the allocation of them to External Unit 1 or External Unit 2 is automatically set by the Head Unit.

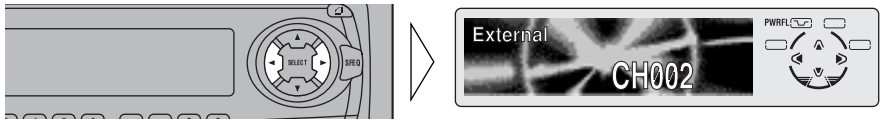
Basic Operation of XM

1. Select XM.



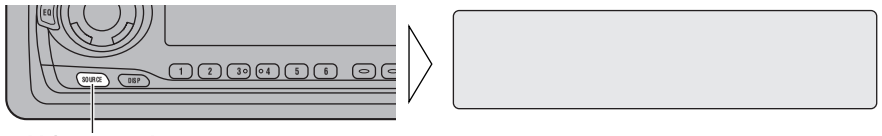
Each press changes the Source ...

2. Select a desired Channel.



Note:
- For details, refer to “Selecting the Channel by Channel Number”.

3. Turn the source OFF.



Hold for 1 second

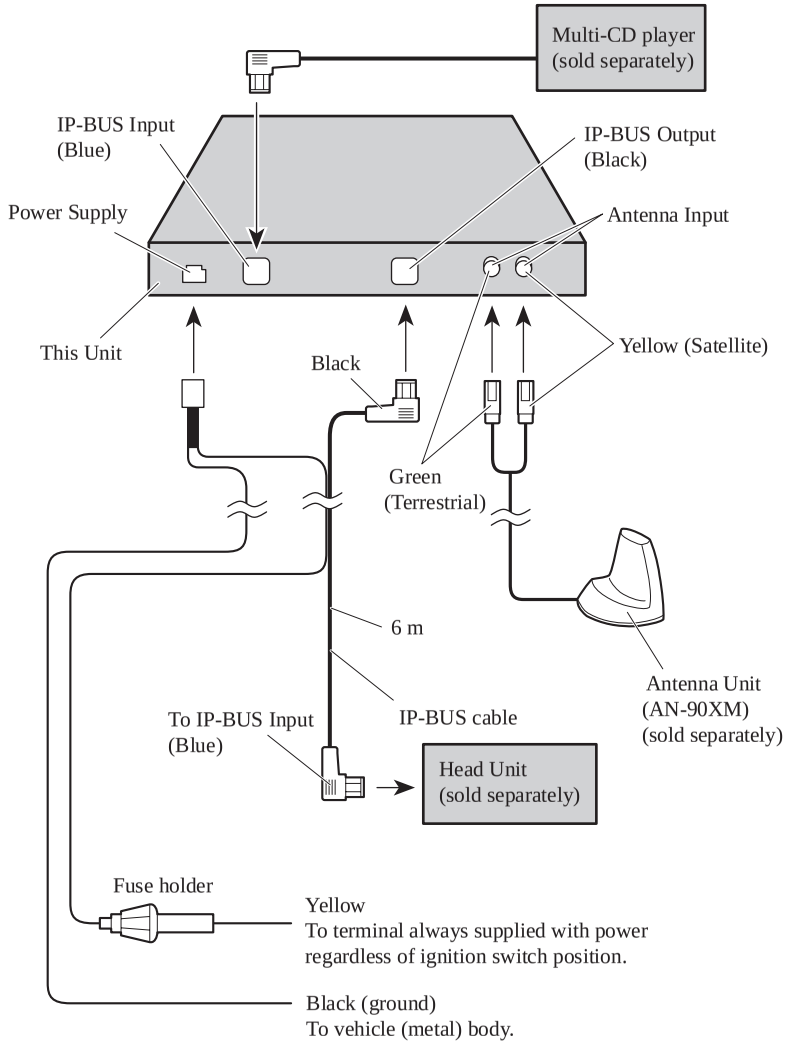
Note:
- Display changes as follows when you switch Channels or operate in other ways.

  Channel Number → Channel Name → Selected Display *

  * For details, refer to “Switching the Display”.
- It may take a few seconds before you can hear anything while this product acquires and processes the satellite signal when you switch power ON, change the source to XM Tuner, or select a Channel.

Connecting the Units

Connection Diagram



8.2 SPECIFICATIONS

Specifications

General

Power source ..... 14.4 V DC (10.8 – 15.1 V allowable)
Grounding system ..... Negative type
Max. current consumption ..... 2.0 A
Backup current ..... 2.0 mA or less
Dimensions ..... 220 (W) × 28 (H) × 145 (D) mm
[8-5/8 (W) × 1-1/8 (H) × 5-3/4 (D) in]
Weight ..... 0.85 kg (1.9 lbs)

XM tuner

Frequency range ..... 2,332.50 – 2,345.00 MHz
Usable sensitivity
Satellite ..... – 94.0 dBm
Terrestrial ..... – 90.0 dBm

Audio

Signal-to-noise ratio ..... 92 dB (IHF-A network)
Separation ..... 75 dB

Note:
- Specifications and the design are subject to possible modification without notice due to improvements.